

Railways of Australia

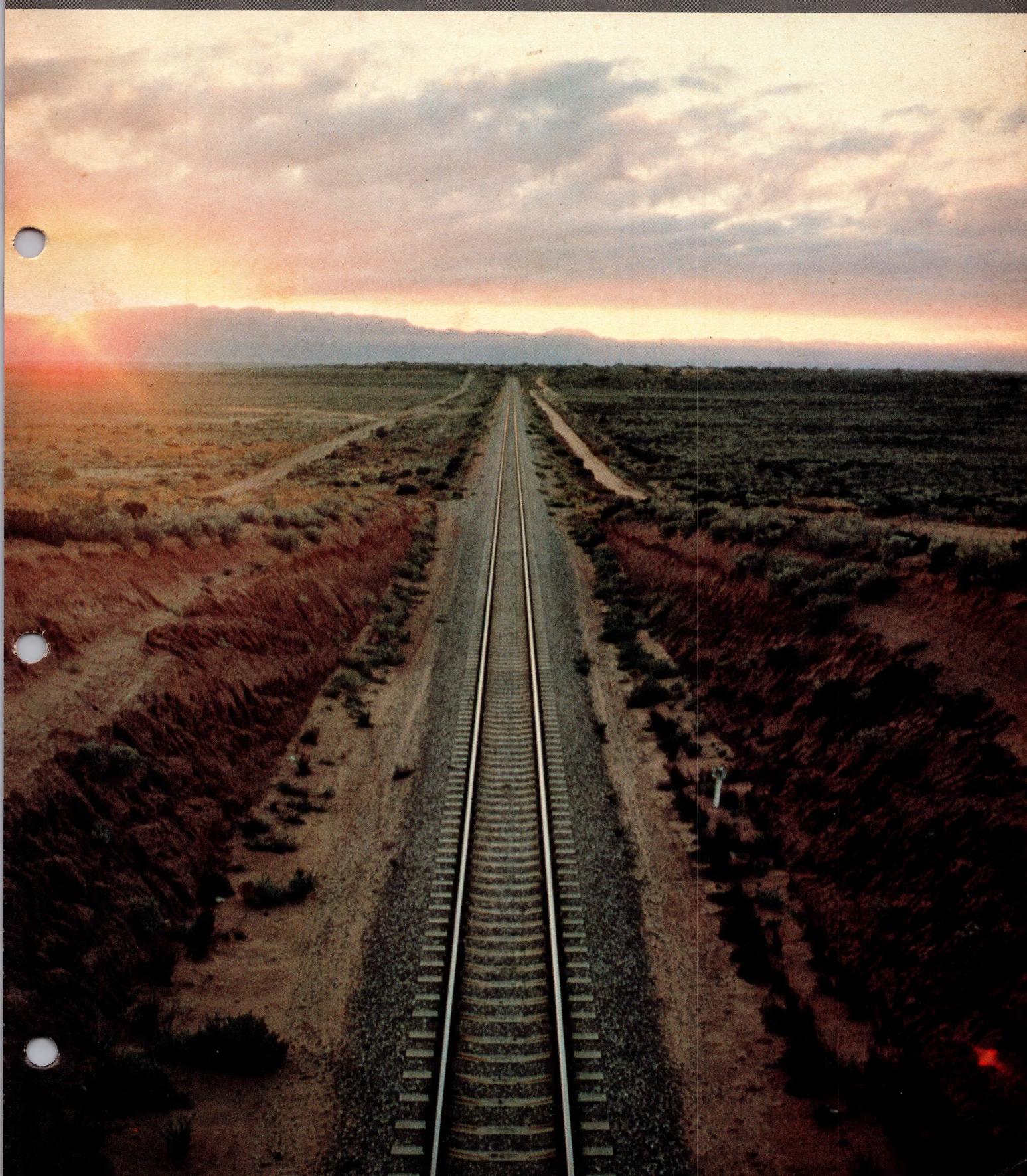
Network

ROA

Vol. 16 No. 9

November 1979

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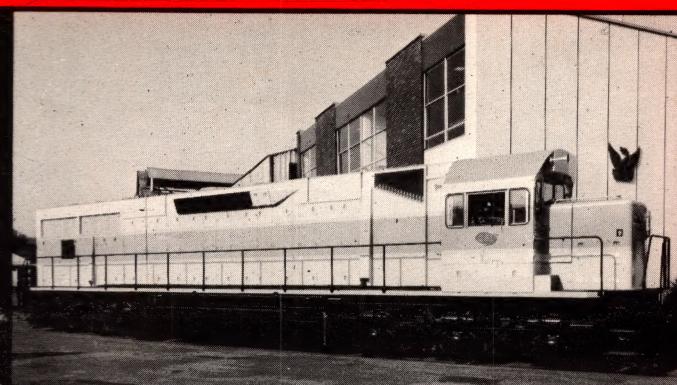
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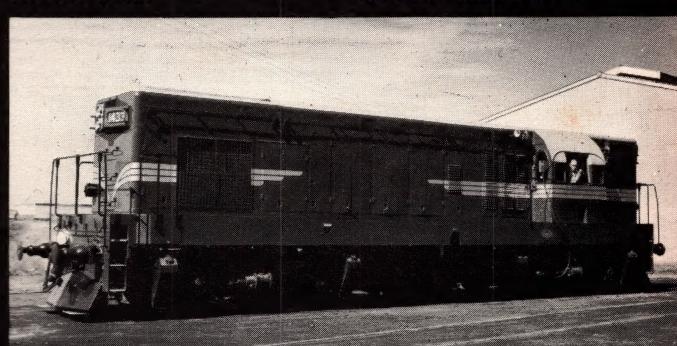
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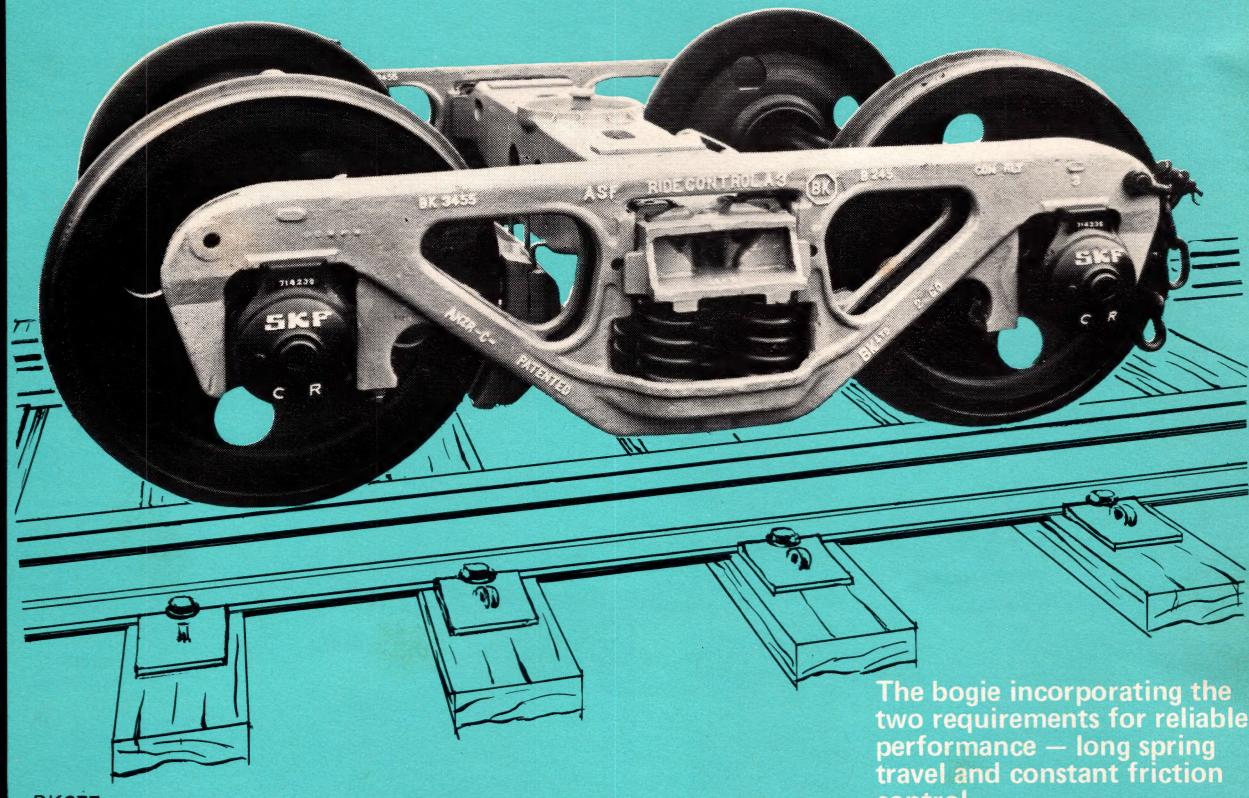
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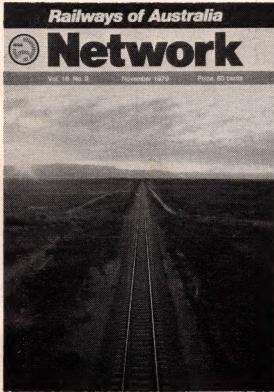
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- Queensland Railways
- Victorian Railways
- Western Australian Government Railways

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OUR COVER

The new standard-gauge line, that will link the Trans-Australian Railway at Tarcoola with Alice Springs, has crossed the border into the Northern Territory.

Advertising Enquiries

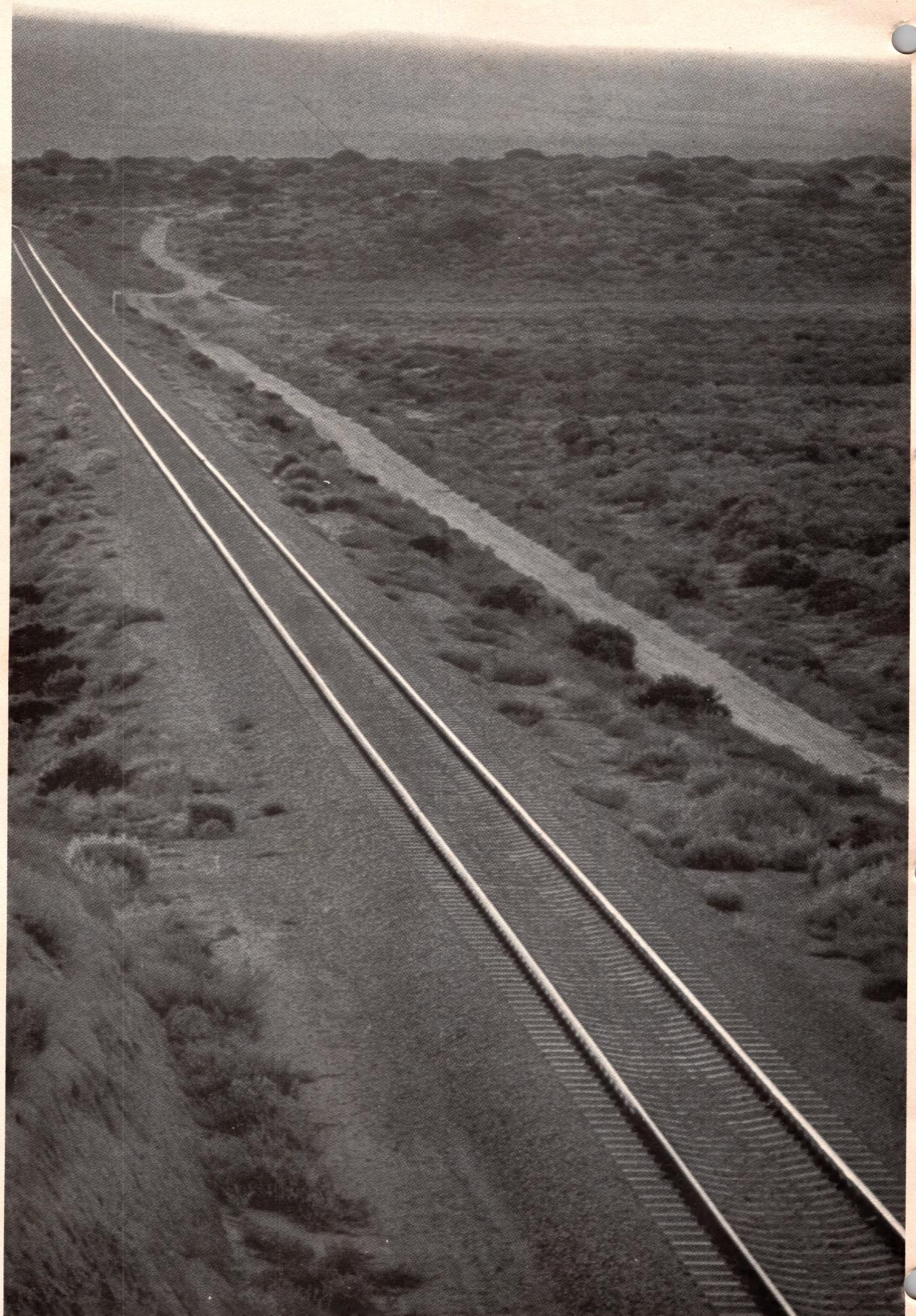
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Typical countryside around the new Tarcoola-Alice Springs line.



Railways of Australia Network

“Diamonds” for the Chartered Institute of Transport

This year is the Diamond Jubilee of the Chartered Institute of Transport. Seven years after its foundation in England in 1919 the Institute was granted a Royal Charter. Half a century later, this hale and hearty progressive body is generating continuing interest in its objectives and spreading its rationale.

The aims of the Institute are relatively simple... “to promote, encourage and co-ordinate the study and advancement of the science and art of transport in all its forms”. This lofty world-embracing ideal is endorsed most heartily by the Chartered Institute of Transport in Australia.

Gains which can be made by enthusiasm and dedication were amply demonstrated by the Victorian Chapter, under the Chairmanship of Ian Hodges, at the now well recognised annual seminar, which was held in Melbourne in August of this year. Many fine papers were delivered by particularly well-qualified speakers from various areas of expertise in the transport scene. The 1979 seminar focused on the needs of both passenger and goods transport users in the light of services available or planned. The theme “Transport — The Demand-Supply Connection” — was ever appropriate to 1979/80.



Ian G. Hodges, Chairman, Victorian Chapter, Chartered Institute of Transport.

One of the most stimulating sections was the keynote address by P. G. Pak-Poy, Chairman of the Pak-Poy Consultancy Group. He introduced his subject matter, “The Demand-Supply Connection”, by quoting an article from the magazine “The Engineer”. Dealing with London traffic it commented in part...

“It yearly becomes more unmanageable. In proportion to its rapid aggregate growth, does it concentrate also in the principal thoroughfares already overcrowded... something must be done. What must it be? Whatever plans are proposed are likely to be costly, yet the cost of the inevitable improvements that must be made will increase with every year of neglect.”

This editorial comment was published in 1859.

The problems of the transport industry have changed little in one hundred and twenty years. Transport remains a problem area for the freight consignor, the daily commuter — who is probably the most vociferous — the businessman and the tourist.

Australia's problem is one of distance, whether between our widely spaced capitals or localised in the spreading arms of urbanisation. Development of existing services and extensions to them are, of necessity, expensive, requiring vast capital investment.

The aims of the Institute, as mentioned earlier, are “to promote, encourage and co-ordinate...”. Today's transport demands call for efficiency, maintenance of schedules, cost control and versatility. Can the customers be satisfied? There are levels of expectation in the user's analysis before he makes his commitment to a particular mode of transport. Are the Railways of Australia meeting his requirements?

Reverting to the Victorian Section of the Chartered Institute of Transport, the chairman's opening

From the Executive Director's Desk



and throughout the 1979 seminar, particular emphasis was directed to the need for effective training and educational programmes.

Training and mastering the art of communication are vital factors in the transport industry. The traditional roles of employer and employee are changing — and failure to adapt to the modern concept has, in some ways, contributed to the current economic and industrial malaise.

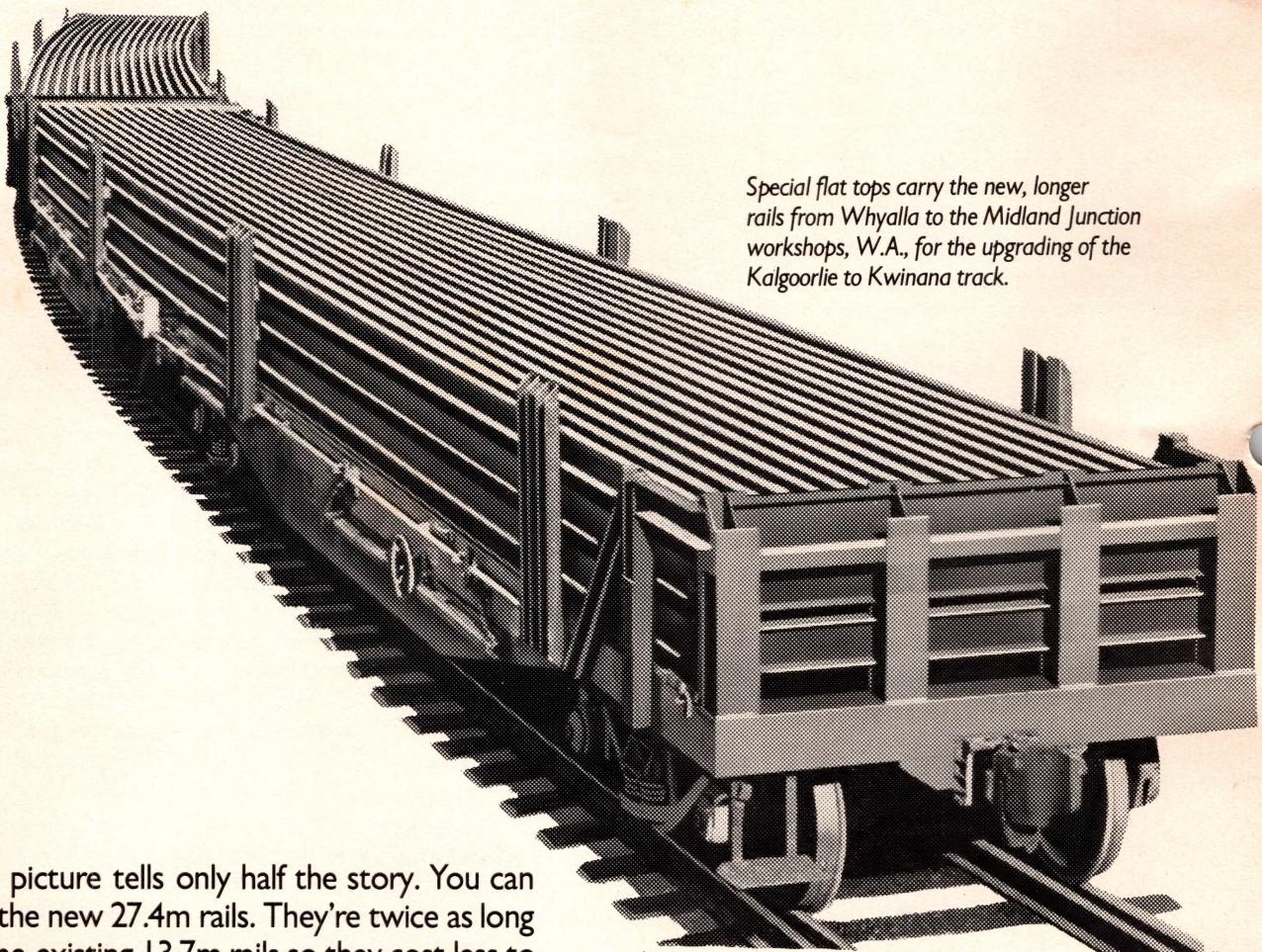
Mutual trust can lead to greater understanding and productivity. More personal communication can help eradicate the problems which beset the transport industry every day.

The transport industry in Australia faces an unprecedented challenge. The success of the Victorian Chapter Seminar, in 1979 and before, suggests that the Chartered Institute of Transport will be pathfinders for the next decade, as they have been for the past sixty years.

Over the next few issues of Network, the principal points put forward by the main speakers at the Victorian Chapter Seminar will be reproduced in order that people unable to attend the seminar can reap the harvest sown by individuals of the calibre of the specially selected speakers.

NEVILLE J. GAZZARD
Executive Director

New 27.4m steel rails from BHP cut corners on costs.



Special flat tops carry the new, longer rails from Whyalla to the Midland Junction workshops, W.A., for the upgrading of the Kalgoorlie to Kwinana track.

The picture tells only half the story. You can see the new 27.4m rails. They're twice as long as the existing 13.7m rails so they cost less to install and maintain.

Half the number of joints cuts your welding costs and doubles your throughput.

MAKING TRACKS

And you can see how BHP and Australian National Railways have made it easy to transport the new rails from the mill to the welding shop, in specially designed flat-tops.

Notice how the rails flex between the two cars on the curved track.

What you can't see is that the new rail is prime quality 60kg steel made to Australian Standard AS 1085.

Nor is it obvious that the reduction in number of welds reduces the potential for track defects.

You may see these breakthroughs as a

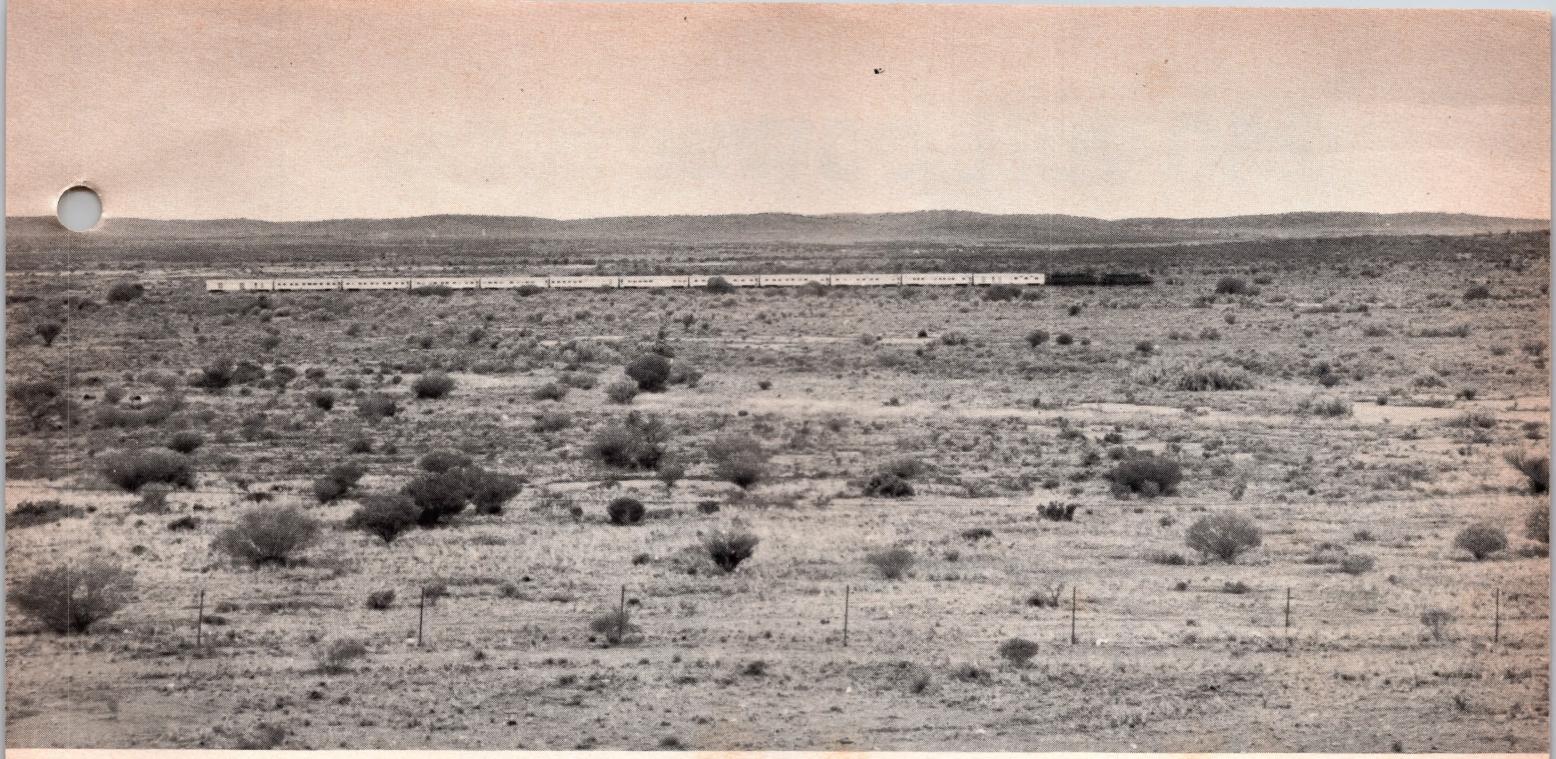
happy coincidence. In reality, they are the culmination of active co-operation between BHP and the Australian Railways systems, and continued investment in production facilities by BHP.

This is only the beginning. BHP is developing a major rail track materials centre at Whyalla to meet the growing demand for high quality materials by the Australian Railways systems.

Now, the whole picture is clear. BHP can produce new 27.4m steel rails that offer economies in installation and maintenance.



BHP Steel



The Desert Blossoms — PTC's \$2 million Ivanhoe Complex

Passengers travelling across Australia on the famous "Indian-Pacific" can be forgiven for not knowing too much about Ivanhoe. On both westbound and eastbound journeys, the trains pass through this station in the pre-dawn darkness.

Ivanhoe — just a dot on the "Indian-Pacific" route map — is situated in the midst of harsh and inhospitable red loam plains, mallee and salt bush, "Bathurst Burr" and spear grass. It is noted for dust-storms in dry seasons, and incredibly beautiful sunsets.

But Ivanhoe is a vital point on the trans-continental journey, and probably justifies greater mention than the somewhat scant reference it receives in strip maps issued to passengers on the luxury expresses:

"IVANHOE — 3146 km to Perth; 816 km to Sydney; 88 metres above sea level. Town built on site of Government well at junction of two travelling stock routes".

The average annual rainfall is only about 200 mm, but occa-

sionally, as in last November, the township receives half the year's average rain in a couple of hours! And a shower of only 10 mm will isolate the town, as the roads become impassable — the nearest bitumen road is 130 km to the south.

This, then, is the desolate area where a new township has arisen — just as grasses and wildflowers spring out of the parched land after rains.

"Indian-Pacific" passing through typical far west NSW country.

It's at Ivanhoe that the powerful diesels hauling the sleek "Indian-Pacific" and giant trans-continental freight trains are refuelled; it's at Ivanhoe that the train crews that man these services are rested. This small station, originally opened on 19 August 1925, is also the permanent base for a track-maintenance team that helps to keep the 680 km route between Parks and Broken Hill in first-class condition.

The PTC Project

For more than a year, Ivanhoe Railtown has been a centre of activity with construction for the Public Transport Commission of New South Wales of

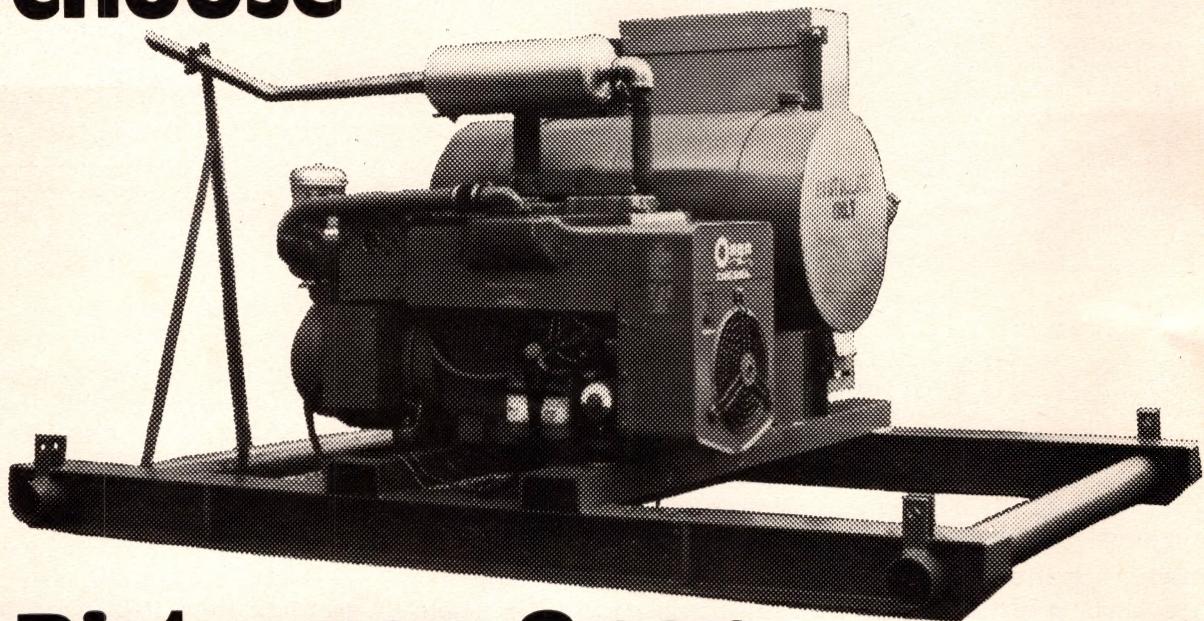
- 23 new houses for employees, costing \$1.4 million
- A new motel-type Rest House, costing \$300,000, and

"Silver City Comet" passing through Ivanhoe, with the new village in the background.



240 volt power for migrating camps...

Queensland Railways choose



Distragen-Onan.

The most recent \$290,000 order for 40 units is part of a \$13 million programme to improve the living conditions of some 2500 railway maintenance men who live in remote areas of Queensland.

The ONAN units are 4.5kW and 9.0kW capacity, modified by Distragen to Queensland Railways specifications. They provide reliable power for lighting, refrigeration, cooking, hot water, water pressure pumps and other purposes in migrating camps.

FEATURES INCLUDE

- 24-hour continuous operation
- large capacity fuel tanks for several days operation before refuelling
- completely self-contained for quick and easy re-location
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- canopies

PROVEN RELIABILITY

Because the alternator and diesel engine are manufactured by ONAN, both components are perfectly matched for long life and efficiency under extreme operating conditions. The first 7 units in the field clocked between 9000 and 12,000 hours before needing an overhaul!

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Onan



- A water filtration and purification plant, costing \$100,000.

The new houses, incorporating the most modern refinements of those in the capital cities, are replacing old timber/asbestos cement cottages tenanted for over thirty years.

The new Rest House provides en-suite facilities for twenty staff at any one time.

In the other segment of the big project, the supply of pure water for domestic purposes will cease to be a problem when the filtration/purification plant is completed.

New Houses

Following a meeting on site between Union representatives and Commission officers, a decision was made to replace some of the outdated cottages. The Housing Commission of NSW was asked to design and supervise construction of 23 new houses, and to update the best five of the old buildings to a desirable standard.

The specifications adopted called for low-maintenance energy-saving buildings which, because of the harsh local climate, had to be well insulated, dustproof and air-conditioned.

The Housing Commission submitted cottage floor plans on which five variations were available.

Each cottage has three bedrooms, with ample shaded windows, living-room, dining-room, kitchen, bathroom and laundry, enclosed verandahs on two sides, and a large carport which is part of the house. To combat the searing summer temperatures, ducted evaporative air-conditioning systems direct cool air to every room in each house. In the winter, the living and family rooms are warmed by gas space-heaters.

Solar Collection Panels

Solar hot-water systems have been installed in each new residence.

These systems have an electric booster element to provide sufficient hot water even on the coldest days.

The use of solar system in such a climate assists in keeping electricity costs to a minimum, and in conserving other energy sources.

Television

In this modern era, no up-to-date home is complete without television. With an eye to the future, each Ivanhoe home is fitted with a television antenna in readiness for satellite-relayed telecasts.

At present, television reception in "outback" Ivanhoe is extremely poor, but the foresight displayed by providing an antenna on every home will ensure good reception — with a choice of programmes — when satellite relays become available.

* * *

The contract for construction of the new homes was let to Warburton Constructions Pty Ltd of Griffith and initial work started in September 1978.

As in any new sub-division, the contract included provision of:

- New roads, bitumen sealed, kerbed and guttered.
- New sewerage and water supply system.
- Fencing, and concrete paths.
- Tree-planting to improve the environment.

For convenience, the builder subcontracted and virtually became the co-ordinator and supervisor for the whole complex, which is common practice in projects of this magnitude.

These are some of the features of the new homes:

- Raft floor slab of reinforced concrete.
- Timber frame and truss roof construction.

The new houses at Ivanhoe Railtown.

- External lining of asbestos-cement weatherboards.
- Internally lined with plasterboard.
- Well insulated roofing, covered with brightly-coloured "marvi-plate" metal decking.
- Evaporative cooling plant and hot-water storage units housed in rooftop enclosures.
- Rainwater is collected from roofs and pumped from tanks to kitchen sink. This is an additional fresh-water facility to the supply of filtered water from the central plant.

All streets in Ivanhoe proper — which is about 2 km from "Railtown" — are named after explorers, and this tradition has been continued in the new village. The two new streets are named Mitchell Street and Oxley Crescent.

Old Cottages Renovated

Extensive renovations to five of the old cottages involved:

- Extensions to the living rooms in three cottages.
- Construction of third bedroom in two cottages.
- Replacement of internal linings with plasterboard.
- New electrical wiring.
- Replacement of old asbestos-cement roof with new "marvi-plate".
- New floor coverings — vinyl tiles throughout.
- New evaporative cooling ducted system — mounted on roof.

An average of \$24,000 was spent on renovating each of the five cottages to bring them up to the new standards.

New Rest House

The provision of modern, comfortable housing has not been confined

to the "permanents" of Ivanhoe. Transient staff — the drivers, the observers, and the guards — and other staff required to stay overnight at Ivanhoe can also enjoy top quality accommodation.

The new \$300,000 Rest House has replaced the deteriorating and outdated timber building and represents a new concept in PTC accommodation for train crews.

With its courtyard centrepiece, the new motel-style Rest House was built after discussions with employee union representatives to ascertain their requirements. The successful tenderer was K. W. and P. D. McDonnell of Deniliquin.

It consists of 20 single-unit carpeted bedrooms, each with tiled ensuite facilities, with rooms facing onto the central courtyard which will be attractively landscaped.

Communal amenities comprise:

- Carpeted lounge and television room.
- Dining area.
- Kitchen with stainless steel fittings.
- Laundry.
- Cleaners' amenities and storage spaces.

Because of the unstable nature of the soil peculiar to this area, a pier and beam system of construction was adopted.

Forty concrete piers, each 750 mm in diameter, were poured to an average 7,300 mm depth, so as to bear on a more stable foundation.

Reinforced concrete slabs, 200 mm thick, were poured over a temporary cardboard formwork. This technique creates a "void" between slab and soil when the cardboard disintegrates. Thus, when the characteristic swelling and sinking of the soil occurs, it has no effect on the structure.

Brick Veneer in Reverse

To assist in protecting bedrooms from the intense summer heat, the external walls of the Rest House are brick veneer, but in reverse. Walls have a brick inner skin, with asbestos-cement weatherboards fixed externally to timber battens over insulation material. This method of construction has a higher resistance to heat penetration.

Local brick suppliers were given the opportunity of tendering, in keeping with Government policies on decentralisation, rather than



One of the new homes, showing carport and rooftop enclosure for cooling plant and hot-water storage unit.



One of the five renovated cottages.

bringing this material by rail to Ivanhoe. As a result, the chosen bricks blend in well with the red Ivanhoe soil, thus enhancing the overall appearance of the building.

Ceilings are lined with asbestos-cement sheeting and plasterboard. There are exposed beams in the dining room.

The Rest House is served by three reverse-cycle air-conditioners, with additional heating capacity for winter.

Landscaping

Planting will be started shortly by Commission staff to beautify the overall area. The courtyard and surrounding grounds will be turfed, and planted with both native and foreign trees and shrubs.

With Ivanhoe's extremes of drought and frost, it is essential that only those plants able to contend with such variables are selected.

Preference will be given also to trees that will give plenty of shade to the area.

Clean Fresh Water

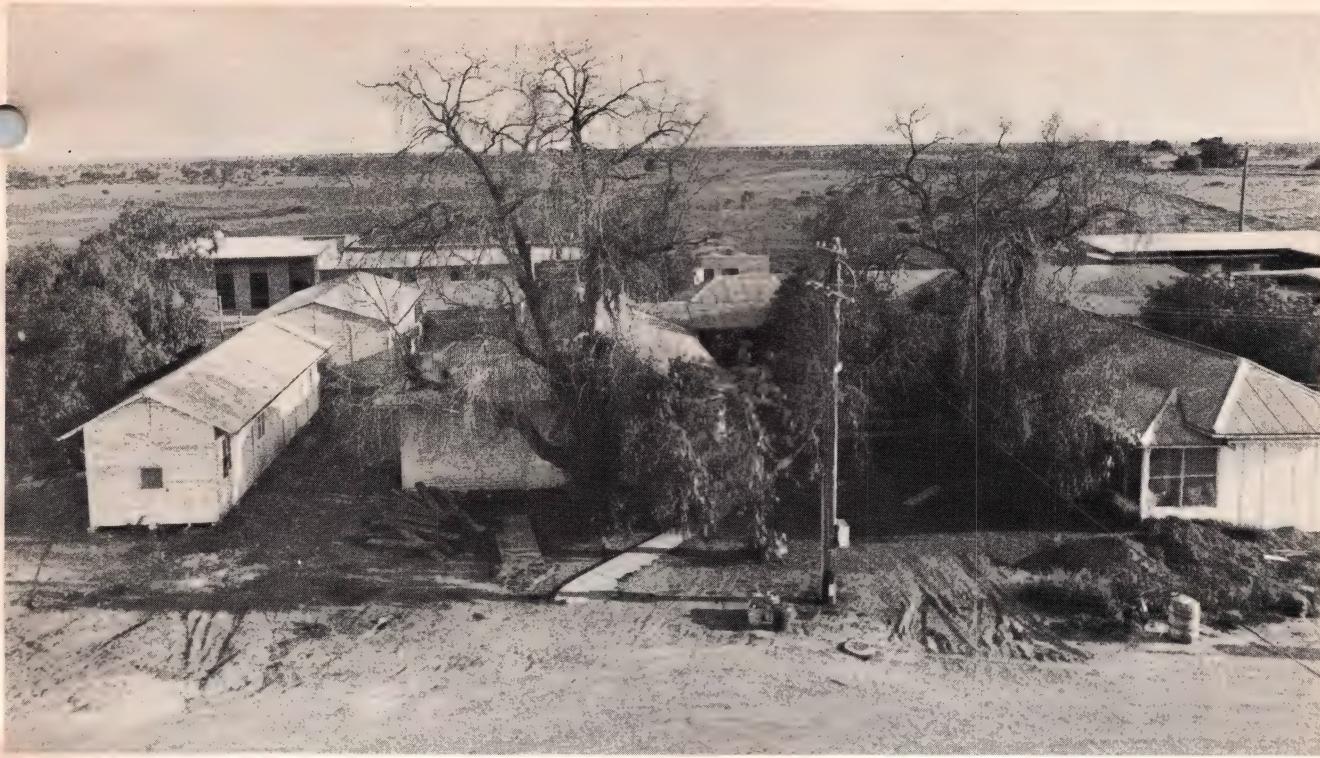
The township of Ivanhoe draws water from Lake Morrison, which is

approximately 28 km south of the township. The water is pumped from the lake to ground storage dams in Ivanhoe township. It is then pumped into the elevated storage tanks and gravity fed to all residences including Ivanhoe Railtown. The supply at the Ivanhoe rail settlement is supplemented by the cartage of water from the Darling River at Menindee by water trains over a distance of 191 km.

The water at Ivanhoe is noticeably coloured and has an unpleasant odour, particularly in the summer months.

With rainwater supplies invariably critically short in the dry summer months it has become necessary to provide an alternative means of clean, pure water to supplement the household supply.

The NSW Public Works Department, on behalf of the PTC, has given a contract on a "design and construct" basis to a Melbourne firm, Water Treatment Pty Ltd, to provide a filtration and purification plant. When this plant is installed, water will be filtered and purified automatically, with a maximum supply rate of 4,500 litres per hour.



The old rest house, with the new \$300,000 building in the background.



Exterior view of the new rest house.



Interior of the new rest house, prior to final fitting-out.



Courtyard of the new resthouse, soon to be landscaped.

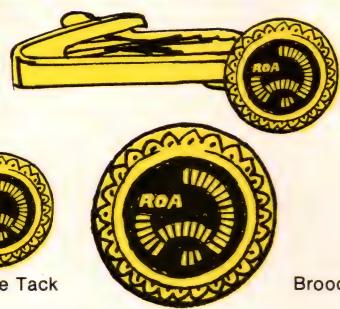
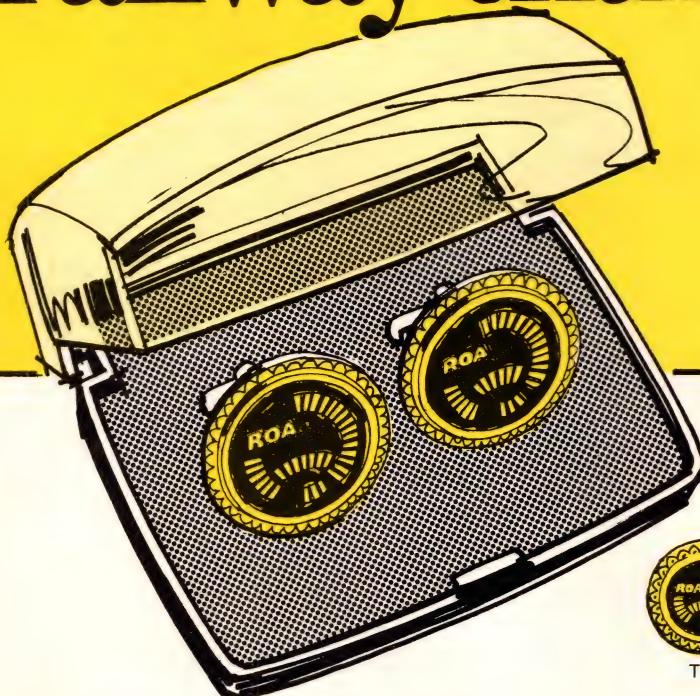
Air-Conditioned Comfort

PTC staff at Ivanhoe no longer envy the luxury enjoyed by passengers on "Indian-Pacific" in their air-conditioned comfort as the train snakes its way across the arid heart of Australia with its lonely settlements.

With the PTC's investment of \$2 million in the new air-conditioned homes and the Rest House, staff and their families living at Ivanhoe and train crews pausing there overnight, can now relax in comfort, irrespective of the searing summer heat or the frosty winter nights. ■



ideal gifts for the railway enthusiast



Tie Bar

Tie Tack

Brooch

All "Network" readers will be familiar with the Railways of Australia logotype which appears on the front of this magazine.

Railways of Australia have now produced four items of jewellery finished in black and gold bearing this logotype - cuff links, tie tacks, tie bars and brooches. All are first class products and have been hard gold plated to provide not only obvious quality in appearance, but extremely long life.

These items are attractively priced and are available through the mail by writing to Railways of Australia. Prices are:- Cuff Links \$5.00. Tie Tacks \$2.50. Tie Bars \$2.50. Brooches \$2.50.

Plastic presentation boxes are also available for the cuff links at the modest cost of \$1.00.

To place your order, simply fill in the coupon below. Please allow 2-3 weeks for delivery.



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sets of R.O.A. cuff links @ \$5.00
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in presentation boxes @ \$6.00

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My cheque/money order for \$ is enclosed.

Postage @

TOTAL \$

NAME

ADDRESS

POSTCODE

Steel Highway under Capricorn

A paper presented to the Australian and New Zealand Railways Conference, Sydney, October 1979

by K. A. Smith, OBE

Chairman, Australian National Railways Commission

As my fellow-Commissioners in Railways of Australia will next month attend a unique occasion in the history of transport in this country, a ceremony to mark the entry of the new standard-gauge line from Tarcoola into the Northern Territory, I thought it might be appropriate to reflect on some aspects of this major engineering project.

While alternative routes to Alice Springs have been considered from as early as 1925, when a survey and estimate of costs of a direct line from Kingoonya to Alice Springs was completed, the present project could be said to have commenced with a report which I submitted to the then Minister for Shipping and Transport on 26 June 1967.

At that time operations of the outmoded (in terms of construction, capacity, transit times and reliability) and ill-sited (for diesel locomotion) narrow-gauge railway between Marree and Alice Springs were regularly and seriously disrupted by floods and washaways due to inadequate bridging and drainage. The position has changed little since.

The report examined various proposals for the provision of a reliable all-weather minimum-maintenance railway to service Alice Springs from Port Augusta in South Australia.

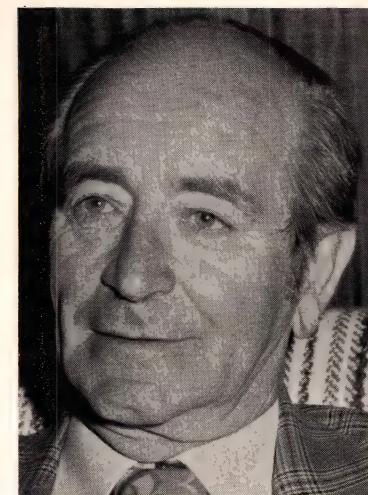
Three proposals were considered: (1) Upgrading the existing narrow-gauge railway between Marree and Alice Springs.

- (2) Conversion to standard gauge of the existing narrow-gauge railway.
- (3) Provision of a new standard-gauge railway to Alice Springs from some point on the East-West trans-continental railway.

In summary, the report concluded that only one of those proposals could be seriously considered, that of constructing a standard-gauge railway from Tarcoola to Alice Springs, and it was recommended to the Minister that funds be made available for a detailed survey of the proposed route.

When considering this proposal, Cabinet took the view that before it made any decision to improve the railway link between Port Augusta and Alice Springs, it should be able to consider the relative merits of an improved road link as against an improved rail link, also alternative combinations of road and rail. It therefore decided to appoint an inter-departmental committee to undertake a cost/benefits study of these options.

This committee reported in April 1970 that the improvement of existing land-transport facilities between Port Augusta and Alice Springs was justified on economic grounds and that the preferred course of action was the construction of both a standard-gauge railway between Tarcoola on the Trans-Australian Railway and Alice Springs and the construction of a sealed road. The report found that improvement to both railway



*Mr K. A. Smith, Chairman
Australian National Railways
Commission*

and road were economically justified because they each provide for different transport tasks. However, if the choice was to be limited to one or the other, the evaluation indicated that construction of a new standard-gauge railway was preferred to construction of a sealed road. As a result, \$230,000 was allocated to Commonwealth Railways in the 1970-71 Budget to start a detailed survey for the new railway.

As the survey progressed, a construction plan based on the use of concrete sleepers was developed and forwarded to the Minister on 1 December 1971. This was ultimately adopted and Government support for the project was announced by the Treasurer during the 1972/73 Budget speech.

An agreement to construct the Tarcoola-Alice Springs railway was signed by the Prime Minister and the Premier of South Australia on 10 April 1974, and the first sod was turned by the then Prime Minister, Mr Whitlam, on 12 April 1975.

Although this project received approval prior to the Environment Protection Act 1974, consultants were commissioned, as a gesture of goodwill, to prepare environmental impact assessments, one on the location of the terminal site at Alice Springs and another on the general route up from Tarcoola. The purpose of the studies was generally to determine the effects on the environment of constructing and operating the railway and to discuss measures for the amelioration of those effects. Both studies were entirely favourable to the project.



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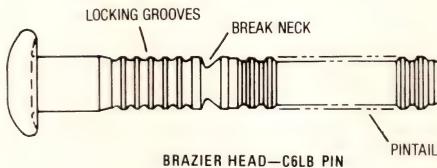
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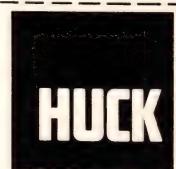


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Pneumatic or hydraulic installation tools are used depending on fastener size.

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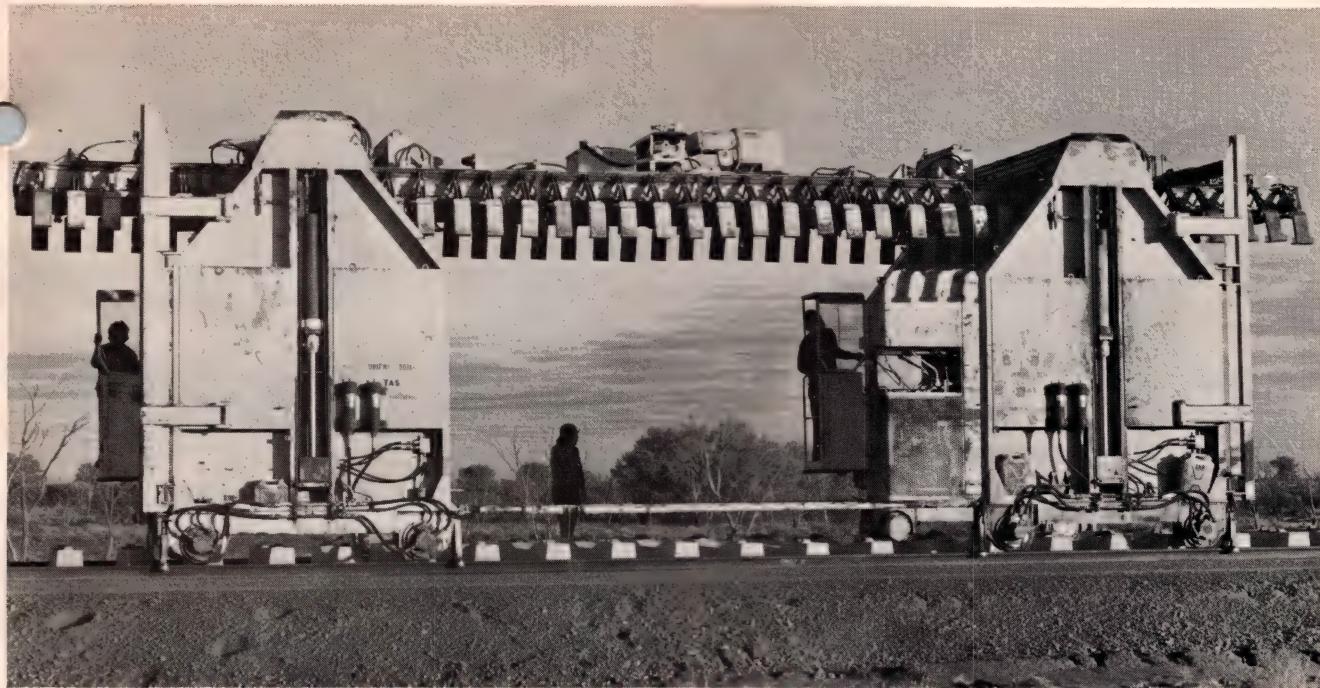
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The Geismar gantry, the first of its kind in Australia, lays 40 concrete sleepers at a time, correctly spaced.

The study of the terminal sites at Alice Springs resulted basically in the retention of the existing site, but with modified land boundaries arranged to assist town-planning requirements and allow space for expansion of the "Central Business District" of Alice Springs and the development of community facilities.

It is interesting to note that there is no conflict between environmental protection requirements and sound engineering procedures in this arid and potentially "fragile" area. Both recognise the need for minimal disturbance of natural drainage patterns, for precautions to avoid sand drift, for preservation of as much as possible of the natural vegetation and for promotion of regeneration by appropriate treatment of borrow pits and other disturbed areas. The environmental assessment acknowledged that "Australian National Railways has conscientiously limited construction damage to the environment to a minimum".

Very little was known of Aboriginal ceremonial and mythological sites in the area and a complete survey was not made until 1975 as part of the environmental assessment. In the meantime, some had been found during the railway survey. When that survey began, at the end of 1970, ANR Construction Engineer, Des Smith, was made an Honorary Warden by the South Australian Museum on behalf of the Aboriginal and Historic Relics Administration. He was able to report

a number of interesting discoveries for inclusion in the register of Aboriginal sites.

This is an example of the close co-operation and mutual assistance between ANR and State and Commonwealth departments and instrumentalities that has been a notable feature of the project since its inception. While the engineering and planning has been done by ANR staff, the expertise of other departments was used in their various specialised fields during the investigatory work. The Australian Survey Office has carried out all the survey work and the geological and water resources authorities of South Australia and the Northern Territory have done a great deal of work on our behalf. In every case the work has been done efficiently and enthusiastically, with benefit to all concerned.

The new line will run for 831 km from Tarcoola on the Trans-Australian Railway almost due north to Alice Springs. It is about 150 km west of the existing route (with a gradual convergence north of the South Australian border) and off the flood plains on which the old line was constructed. Heavy rainfalls in recent years resulting in washaways and lengthy disruption of narrow-gauge services to the Territory have proved that the new route will be operational in all seasons following its completion at the end of 1980.

The high standard of construction will significantly reduce operating costs, particularly track

maintenance. It will also allow a faster and more reliable service which will assist in obtaining and holding a significant share of traffic in the north-south rail corridor.

The Tarcoola to Alice Springs Railway Act 1974 stipulated that "the amount expended on the construction of the railway shall not exceed \$145,000,000". One of the most remarkable aspects of this epic undertaking, especially in these days of spiralling inflation, is that we confidently expect it will be completed within budget.

We take pride in this achievement, and also in the fact that the project will be completed nearly a year ahead of schedule. These results have been made possible by the fine efforts of the Commission's staff and its contractors. It was a great mark of confidence for the Government, in times of tight expenditure controls, to recently grant ANR accelerated funding to allow our progress towards early completion to be maintained.

You may also be interested to learn that the name "The Ghan" won't die with the narrow-gauge line but will transfer to the standard-gauge passenger service to "Alice" once it commences. Meanwhile we are successfully promoting about fifty "last trips" on the old Ghan as "One of the Last Great Train Adventures in the World".

The new passenger service will be similar to the existing one except that provision will be made for sitting-up passengers, serviced by a buffet-diner. Our marketing people are studying the possibility of increasing passenger services on the



NOW... Sure plain track Plasser 07

In mid 1977, the first bogie mounted Plasser 07-Series Switch Tamping Machine in Australia went into service with the Public Transport Commission of N.S.W.

The performance of this machine speaks for itself. The Commission has since purchased a further 5 identical machines.

Additionally, 3 machines have been purchased by Western Australian iron ore mining companies and railroad contractors.

Sales of the Plasser 07-275 in Australia now total 9 machines, with some 250 in use throughout the world.

EXCLUSIVE PLASSER FEATURES:

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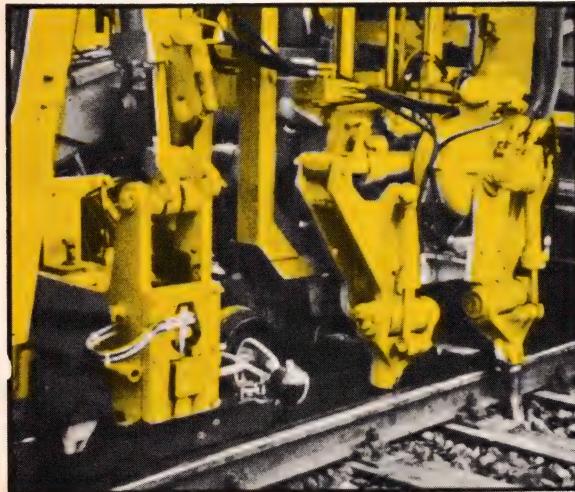


This unique lifting hook grips either the rail head or the rail base.

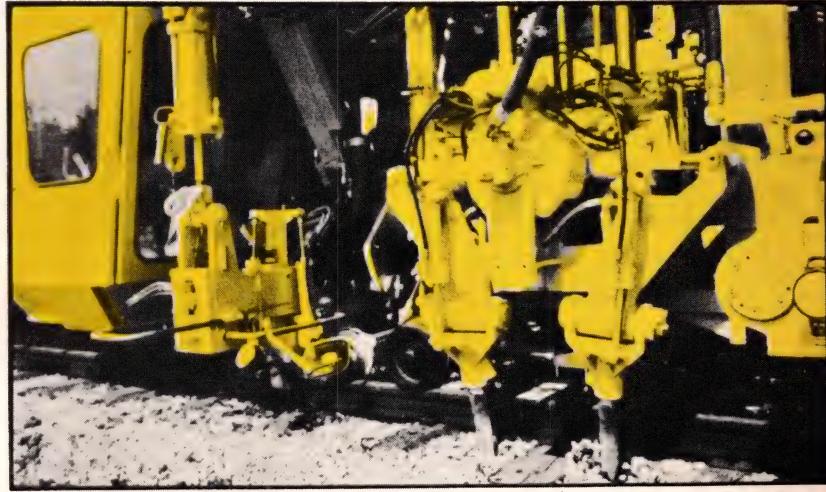
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make switches and crossings and fast with one machine.

275



Each tamping tool can be pivotted 15° in and 85° out by individual hydraulic controls. Tamping banks move laterally on guide columns.



Reaches every vital spot on the most complex switch or crossing. Finger-tip control of all movements - lifting, levelling, lining and tamping - with all actions in direct view of the operator.

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line above the present one return trip a week. We certainly expect to win business from the buses and to develop our motor-rail service. After all, this is probably the only major rail passenger service in Australia that does not face serious competition from private motorists.

I recently addressed a meeting of the International Cargo Handling Co-ordination Association in Melbourne on the subject of "Landbridge Australia"; and I suggested to them that the East-West Landbridge concept will in time have a North-South dimension, brought about by the extension of the Tarcoola-Alice Springs line through to Darwin. There is already legislative provision for this in the Northern Territory Acceptance Act 1910-1917 and the Railway Standardisation (South Australia) Agreement of 1949.

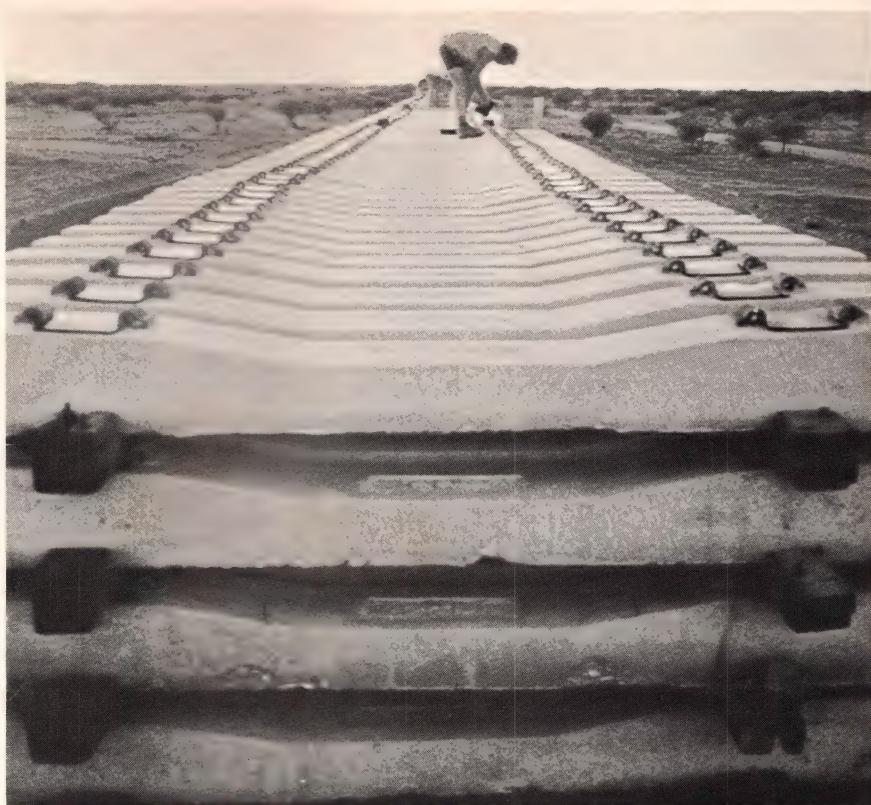
The new Legislative Assembly of the Northern Territory is certainly actively lobbying the proposal, believing that construction of the North-South rail route will facilitate the development of North Australia and its defences, provide an all-weather rapid land-transport system from Darwin to Adelaide, and boost tourism.

The ANR Commission met in Darwin during August to discuss the Territory's transport needs with local government officials and while we were there the Commonwealth Minister for Transport, Mr Peter Nixon, and the Northern Territory Minister for Transport and Works, Mr Roger Steele, announced that a study would be undertaken by both Governments into the benefits and costs of a standard-gauge rail link between Darwin and Alice Springs.

In addition to economic aspects, the study will examine such matters as defence considerations, social impacts and the overall effects of such a railway on the future development of the Northern Territory.

Action is also to be taken to identify and set aside the land necessary for a future rail link. Naturally, the ANR Commission will be co-operating in every way to ensure the progress of these studies.

Work has already begun on the task of route identification. All available existing mapping and photogrammetry work is being assembled and reviewed. This will lead to the identification of localities for which additional



aerial photography and mapping is required as part of the refinement process that will follow route selection and the identification of the land corridor to be secured and dedicated to rail use.

It is expected that much of the route selected will coincide with the existing rail route extending south from Darwin to Larrimah and Daly Waters. But there are some sections which will be avoided by deviation to utilise terrain more suited to a modern standard-gauge railway.

For some years now ANR has been contributing in a small way to Northern Territory Transport Planning. This influence is manifest in such things as a standard-gauge rail route already identified as an exit from Alice Springs and through the hills to the north for about 16 kilometres until it emerges onto the plains at Bond Springs; the zoning of certain land on the outskirts of Tennant Creek for rail purposes; the selection of the site of Darwin's future standard-gauge passenger, freight and freight forwarders terminal; and the identification of a route linking that terminal with the site of Darwin's future deep-water harbour and shipping terminal at East Arm.

The North-South landbridge is a project that will link by rail all Australian capital cities and greatly increase the strategic and commercial importance of Darwin as Australia's "Gateway to the East".

It is also a project which, I believe, would capture the imagination of, and be supported by, most Australians simply because the difficulties associated with defining and funding an acceptable transport system to serve the needs of Australians living in the Centre and North of the continent have been a continuing area of concern to successive Commonwealth and State Governments.

Indeed, Australia must be one of the few countries in the world where there are still frontiers to be crossed by large-scale development railways. Highways themselves do not provide the ultimate answer to development, or closer settlement. They can merely assist or supplement the heavy essential transport industry which railways provide. The whole history of the Northern Territory proves quite clearly that unless there are adequate and economical means of transport within reasonable proximity of potential basic development, then such development simply does not take place.

Completion of the North-South landbridge will require standardisation of the rail link between Crystal Brook and Adelaide. The latest proposal is under study in Canberra and we are hopeful that it will be adopted by the Government and funds provided to allow a start to be made during the 1980/81 financial year. ■



Westrail's Track Renewal —

600 Metres a Day

Westrail's standard-gauge railway between Kwinana and Koolyanobbing is presently being relaid with 60 kg/m rail laid on concrete sleepers at an average rate of 600 metres a day. Roberts Constructions Pacific Pty Ltd, awarded the contract for renewal of the main track, is using the sophisticated "P811" track-renewal machine specially imported from Italy for the rehabilitation project.

It is the first machine of its type to operate on Australian railways and is at present working between Northam and Grass Valley, 125 kilometres east of Perth. The machine, which is fully automated, removes old rails and sleepers, reshapes ballast and places new sleepers and rails in position in one continuous operation.

Leading the "P811" machine are six sleeper wagons each of which can be loaded with 144 sleepers in four banks of 36, each bank consisting of three layers. The wagons are fitted with side rails to carry a self-propelled portal-type gantry sleeper trolley which can pick up 12 concrete sleepers at one time, or 22 timber sleepers.

From the sleeper trolley two conveyors run to the working section of the track-renewal train, one to take down the new sleepers and the other to bring back the old.

On arrival at the site, from the Midland flashbutt depot, the new rail is off-loaded on both sides of the track to be renewed, and fastenings holding the old rail to the timber sleepers are removed.

The "P811" is then manoeuvred into position, the line is broken, existing rail is spread and five sleepers are removed manually. The working section of the train is then positioned and the old and new rails are threaded into the appropriate rollers to enable the operation to start.

As the machine moves forward the old rails are lifted off sleepers to each side of track, and two wheels pick up the old sleepers, turn them over and deposit them on a conveyor to the collecting point on the sleeper trolley.

Ballast is scarified outwards and compacted by a vibrating plate. The new sleepers then slide down a second conveyor and are placed automatically on the bed at positive spacing. The new rails are continuously pulled from the side of the track and correctly located on sleepers.

After the gantry has brought twelve new sleepers to the collection point to feed the downwards conveyor it takes the old recovered sleepers back to the empty wagon.

The concept of the "P811" track-renewal machine is an entirely new one; its simplicity, speed and precision are unequalled. It can be capably handled by five trained operators.

Westrail has re-arranged train schedules to provide five daylight hours each day clear of traffic to allow work with the rehabilitation project to proceed at maximum speed. ■





Cement Supplies in the West

Cement is of vital importance to our modern way of life and, with declining supplies of timber, will become an increasingly essential commodity in the decades ahead. It is an integral part of Westrail's Kwinana/Koolyanobbing standard-gauge rehabilitation project and regular deliveries are made to Meckering from Cockburn Cement's siding in three special tankers to supply the concrete-sleeper factory.

Cockburn Cement Ltd is the major supplier of bulk and bagged cement by rail to country districts. In addition to Meckering, cement is also railed to Bunbury, currently for wharf extension work, and to Albany, Kalgoorlie, Merredin, Esperance and Geraldton for local building construction.

Four containers, each weighing 27 tonnes, are railed weekly to Webberton, near Geraldton, where they are lifted and placed on road transport bound for Cockburn Cement's Depots at Karratha and Port Hedland — a total distance of 2,400 km each round trip.

Westrail is also constructing four 18-tonne demountable containers at the Midland Workshops, two each for narrow- and standard-gauge operations.

Cockburn Cement Ltd started production in South Coogee in 1955, with an initial capacity of 130,000 tonnes a year. Since then production capacity has been increased, in stages, to about one million tonnes annually, making it the largest manufacturer of cement and quicklime in Western Australia.

Prior to cement production, an extensive exploratory drilling programme is carried out on all limestone reserves, and large stockpiles of different quality limestones are maintained.

At present lime-sand is being dredged from the Parmelia and Success sandbanks in Cockburn Sound and pumped, with water, via

an underground pipe from the washing plant to the cement works. Here the lime-sand is ground in ball mills and mixed with limestone, bauxite and other raw materials.

The limestone/bauxite slurry is blended and pumped to rotary kilns where it is calcined to a clinker. It is then reground in another ball mill, together with gypsum, which controls the setting time of the final product.

From the mill the cement is pumped to silos from which it is extracted for bulk despatch or for packing in bags. The product is then delivered to customers by road or by rail.

A new weighbridge and loading bay for narrow- and standard-gauge rail tanker wagons has been constructed to allow bulk cement to be loaded at high speed and in precise quantities.

When loading, two spouts are connected to the top of the tanker

Cockburn Cement plant, south of Perth.

and the cement is fed automatically by air conveyor at a rate of 70 tonnes an hour. A computer controls the type of cement and the amount to be loaded from four different silos.

During bagging the cement passes from a holding hopper through vibrating screens into one of two packer units where it is fed into specially-designed bags. A continuous belt moves the bags to a palletising machine, which automatically stacks thirty bags to a pallet. The pallets are carted to waiting road transport, stored, or taken by forklift truck to covered rail vans in an adjacent siding.

Quicklime is produced on Cockburn Cement's newly-commisioned No. 5 kiln. The product is stored in bulk in concrete silos from which it is despatched by road tankers to industrial users in the Perth, Kwinana and other areas.

As well as being involved in rail-ing Cockburn Cement's finished product to many areas of the State, Westrail also hauls the coal from Collie, which fuels the company's giant kilns. ■

A bulk cement wagon is checked before despatch to the concrete-sleeper factory at Meckering.



Railway Report.

From Australian Timken Proprietary Limited

(Advertisement)

No. 4 November 1979

High Speed Trains

New South Wales commuters could benefit from a combination of British Rail and British Timken experience.

The Public Transport Commission of New South Wales has decided to invest in 10 power and 20 passenger cars for Sydney's high speed rail links.

The trains, which are to be built in New South Wales, will be similar to British Rail's 200km/h High Speed Trains, the fastest and most intensive diesel hauled train service in the world.

Developed as an immediate response to British Rail's need for shorter journey times and greater passenger comfort, the high speed trains have covered more than 27 million km on Timken tapered roller bearings.

The axle bearings — the Timken 'SP' bearing — used on the power cars and passenger cars are similar to the 'SP' bearings used on existing British Rail locomotives and rolling stock.

About 10 years ago British Rail adopted the Timken 'SP' bearing for their newly designed standard range of 120, 130, 140, and 150 mm diameter axle journals.

The 'SP' (Special Purpose) bearing is a development of The Timken Company's familiar 'AP' bearing, of which over six million are now in service.



High speed diesel trains similar to this British Rail unit, could soon be on Sydney's rail network.

The principal difference between the two types of bearing is in the use of labyrinth enclosures for the 'SP' bearing in place of the rubbing seal used in the 'AP' bearings.

Both types are high capacity, factory assembled and lubricated, double row tapered roller bearing cartridge units suitable for mounting directly onto the axle journal.

The 'SP' 150 mm bearing was selected to carry the approximately 17 tonne axle loads of the HST power cars, giving a considerable safety margin on both load and speed.

The power cars have Alsthom prim-

ary suspension and the passenger cars, which are equipped with 120 mm 'SP' bearings, have bogies with radial arm primary suspension.

In addition to the Timken bearings on its axles the HST transmission is equipped with four standard type 'TS' single row Timken tapered roller bearings.

The Timken bearings have given excellent service performance and require no intermediate maintenance between yearly overhauls which consist of simply topping up the grease lubrication.

An Australian first

An Australian railway first will feature Timken tapered roller bearings.

The first rail vehicles with elevated cabs in Australia will be fitted with Timken tapered roller main journal bearings.

The South Australian State Transport Authority's 30 Metro cars are a unique, air-conditioned high powered rail and trailer car concept being built by Commonwealth Engineering (NSW) Ltd at a cost of \$17 million and expected into service in late 1979.

Tapered roller bearings were chosen because the design demanded a rigid construction and self aligning bearings weren't suitable.

The in-board bearing arrangement demanded a bearing size based on physical arrangement rather than load considerations.

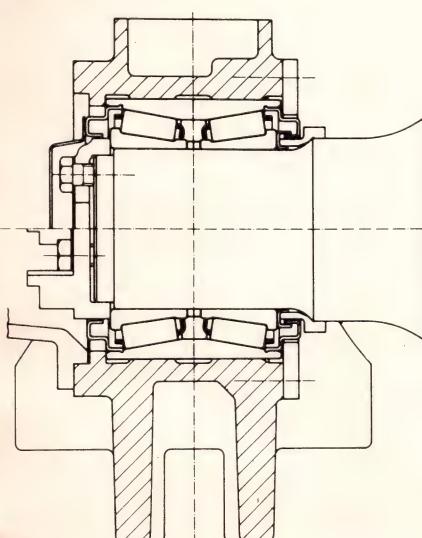
"The Timken Company's considerable experience with axle suspension tubes made them the logical choice for the job," said a Commonwealth Engineering spokesman.

"We contacted Australian Timken to find the right size bearing and after preliminary evaluation it became obvious that the Timken bearing was more than capable of satisfying our design requirements under the severe loading conditions specified to the extent of giving an expected bearing life of several million kilometres," he said.

The bearing assembly consists of two indirectly mounted heavy duty Timken tapered roller bearings designed expressly for railway service.

Optimum endplay in each bearing assembly is set by the cone spacer at manufacture, while routine maintenance is simplified by the separable race construction of the tapered roller bearing.

Bearing assembly axial clearance can be reset during maintenance by adjusting cone spacer length, thus reducing overall bearing operating costs.



Timken 'SP' bearings used on British Rail High Speed Trains.

Recycling Bearings — a cost saver

Three costs are of paramount importance when assessing freight wagon roller bearings.

They are the initial purchase cost, wagon set-out costs incurred when bearing troubles develop in working trains, and bearing remanufacturing costs.

The Timken Company continually compiles and studies cost-related information from many industry sources worldwide, including the Association of American Railroads quarterly wagon set-out publications.

This bearing performance information has led to constant improvement in components and bearing performance. The Timken "XP" (Xtended Performance) Bearing and its spin-off, the "NFL" (No Field Lubrication) Bearing, are examples of customer cost benefits that resulted from these performance studies.

Initial purchase cost isn't ordinarily the most important of the three costs, though since 1969 the average price increase for 21 items necessary for construction and maintenance of railway freight wagons has been 89%.

Springs had the highest price increase, 117% while the increase for roller bearings was lowest at only 30%.

Wagon set-out costs are more important when measured in terms of lost time, loss of customer goodwill, shop work to get the car back in service, and special handling to deliver the wagon to the shop.

The A.A.R. published a report, since discontinued, which showed each bearing manufacturer's set-out record. This report showed quite conclusively that the Timken bearings in service had accumulated substantially more months of service per car set-out than the other brands.

Timken performance was then about 35,000 car months of service per set-out. Brand "Y" was around 28,000 and Brand "X" was 19,000.

Perhaps the most significant cost factor in the railroad industry is that of remanufacturing bearings that have been removed from service.

Realizing the value of statistical information that could be developed at these remanufacturing facilities, The Timken Company suggested a program of accumulating replacement data from the railroads and also offered to develop a meaningful computer program to process information from the nine railroads and twelve remanufacturing shops involved.

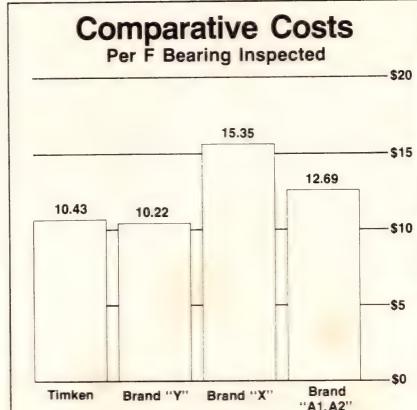
The computer, in gathering component replacement information, looked at the data in several ways.

First, it compared the cost of replacing only cups and cones, the highest cost components of a bearing, on a total of 215,287 bearings made up of a mix-

ture of 50 ton (class D), 70 ton (class E) and 100 ton (class F) bearings.

Though costs vary between shops, the relative costs of Timken, Brand "Y" and Brand "X" are similar at each shop.

Since about two thirds of all cars being purchased involve the 100 ton or Class F bearings, the computer was directed to look at cup and cone replacement costs for those bearings only.



To evaluate performance by brand, the length of time a bearing has been in service must be considered.

Again, Timken bearings clearly outlasted the opposition with 58,157 bearings inspected after seven years with a cost per 1,000 bearing miles of \$0.0497.

Brand "Y" returned a cost per 1,000 bearing miles of \$0.0467, but this was based on a much smaller inspection of 13,634 bearings after 7.3 years, while Brand "X" had 21,177 bearings inspected after 4.5 years and returned a cost of \$0.0940 per 1,000 bearing miles. It is interesting to note that since publication of this data Brand "Y" has ceased manufacture.

Assuming 30,000 average wagon miles annually, the costs are derived by following the formula:—

$$\text{Cost Per 1,000 Brdg. Miles} = \frac{\text{Cup \& Cone Replacement Cost}}{\text{No. of Brdg. Insp.} \times \text{Avg. Yrs.} \times 30,000 \text{ Miles of Service} \text{ Year}}$$

Since there is general agreement that an average one-wear wheel life is 250,000 miles, we can arrive at the comparative bearing cost of wheel change by multiplying the cost per 1,000 bearing miles by 250. Multiplying this by 8, the number of bearings per car, gives the comparative bearing costs per 250,000 car miles.

One large railway remanufacturing shop costs included the data for Class F bearings generated from inspections made during a 12 month period. Thus cost data per bearing month of service was generated rather than cost per 1,000 bearing miles.

The 7,980 Timken Class F bearings inspected averaged 9.15 cents per bearing month of service, a figure obtained by adding the total cost of cups and cones scrapped and dividing that cost by the total bearing months of service.

Cup and Cone Replacement Costs

Cost Per Bearing Month of Service
All Years — All "F" Brdg.

| Manufacturer | No. of Brdg. Inspected | Cost | Cost Ratio |
|--------------|------------------------|----------|------------|
| Timken..... | 7980 | \$0.0915 | 100 |
| Brand "X"... | 2133 | 0.2270 | 248 |
| Brand "Y"... | 1994 | 0.0922 | 101 |
| Brand "A-1" | 1973 | 0.2068 | 226 |
| Brand "A-2" | 395 | 0.2692 | 294 |

The development of similar reporting systems in Australian private and Government railways will allow development of bearing cost controls based on actual railway performance rather than a theoretical life calculation of personal preferences.

Proper cost control is a major management challenge in today's competitive transportation market.

Spirit of Progress

VicRail's luxury overnight passenger express is proof of the reliability of Timken tapered roller bearings.

The Spirit of Progress, which runs overnight between Melbourne and Sydney seven days a week, has been fitted with Timken bearings since December 1973, when 230 axle boxes were equipped with Timken bearings.

Spherical roller bearings had previously been used, but VicRail engineers decided to opt for better performance by switching to Timken tapered roller bearings.

Each Timken bearing equipped axle box has averaged approximately 200,000 kilometres a year, which means that the first box fitted would have travelled over 1,100,000 kilometres.

The Timken bearing performance has been excellent over this long and arduous life.

No bearings have been removed because of fatigue spalling.

(Advertisement)

Australian Railways and the Landbridge Concept*

Landbridge is the rather appropriate name given to an American idea of using one major shipping port for a region and transhipping through freight from that point by rail or road.

Landbridge in this country goes back to April 1975 when the Minister for Transport, Mr Charlie Jones, announced that the Bureau of Transport Economics was studying a Landbridge study and its possible application to Australia.

"There is no doubt that the Landbridge system is the most economical method of transporting cargo over long distances," Mr Jones had told a seminar earlier in the year. He suggested that a Landbridge system be introduced into Australia with Fremantle as the base port for overseas container vessels.

The possibility of turning round ships between European ports and Australia at Fremantle had been mooted regularly since 1958, but had never previously been considered economically viable by the shipping companies concerned.

Understandably the port of Adelaide also staked its claim to become the central point of a national Landbridge transport system, making Port Adelaide Australia's prime loading and unloading port and the focal point of the national railway network.

Port Adelaide's facilities were considerably improved. The entrance to the Port River was deepened at a cost of \$8 million to enable the largest ships on Australian service to enter the port. A further \$6 million was spent on the new container-berth complex at Pelican Point. These facilities, plus existing docks at the port's Outer Harbour, are also backed by large areas of vacant land that could be used.

In addition, Adelaide already had excellent rail connections with all Australian capitals and now, of course, it is the headquarters of the Australian National Railways system.

Despite much Government and private effort, the proposals to terminate overseas container ships at

Fremantle with a rail Landbridge to the eastern States did not materialise in 1975, and, have still not eventuated.

Adelaide's claim to become a Landbridge fulcrum is still valid, and will be further strengthened with the completion of the new Tarcoola-Alice Springs standard-gauge rail link in November 1980, and the eventual standardisation of the rail line between Adelaide and Port Pirie.

What really brought a Landbridge-type operation into this country was the announcement in July 1975 by the chairman of Associated Steamships Pty Ltd, Sir Ian Potter, that four Australian coastal container ships operating between the eastern States and Fremantle would be withdrawn because of the tremendous financial losses on their operation.

In August 1975, the Western Australian Government appointed a working group to report on the implications of the cessation of the container shipping service from Brisbane, Sydney and Melbourne to Fremantle.

To provide railway input to the working group, a meeting of Australian railway representatives was convened in Melbourne in September 1975 and it advised that railways had the capacity to handle immediately the shipping trade of about 400 containers per week.

When Associated Steamships announced that, as they had had no offer of assistance from either the Federal or State Government, their vessels would be withdrawn, the Australian railways assured the Government that all freight previously moved by the container vessels could be handled efficiently by rail.

The daily rail service between the eastern States and Perth offered a six-day delivery ex-Sydney, seven days ex-Brisbane and five days ex-Melbourne.

The total length of Australia's Landbridge from Brisbane to Perth via Broken Hill and Port Pirie is 4,920 kilometres. This compares

with the 6,040 kilometres of the Halifax to Vancouver trans-Canadian Landbridge link for European freight being shipped to Japan, and the world's longest Landbridge, about 12,000 kilometres, connecting Rotterdam in Holland with the Russian eastern port of Vladivostock for freight between Western Europe and Japan.

* * *

In addition to the carriage by rail of the former coastal shipping traffic, the Australian Landbridge has now taken on a much wider role of implementing and monitoring all mainline inter-system rail services.

The Railway Committee that met in 1975 to discuss the handling of the coastal traffic has remained in existence and is now known as the Railways of Australia Landbridge Committee. It meets regularly throughout the year and comprises representatives of all five railways systems.

Queensland Railways joined the Landbridge Committee in 1977 when the promotion of through traffic from Melbourne and Sydney to North Queensland centres became possible.

When the concept of containerisation of rail traffic was first suggested, Queensland could not take much advantage of it, because there were 14 bridges between Brisbane and Cairns that could not clear RACE containers. All these bridges have now been modified and containers can go through to Cairns.

This may not sound a great example of railway progress, yet when you realise the tonnages involved it is a great leap forward. For example, traffic coming into Queensland by rail represents 1.63 million tonnes, while traffic out of Queensland totals 426,000 tonnes.

* * *

One of the major operating developments to arise from the Landbridge Committee is the establishment late last year of a system of centralised control of inter-system rollingstock known as CENWAG.

The system is presently operated by representatives of ANR, VicRail and the Public Transport Commission of New South Wales on the basis of daily telex reporting by all systems of the movement of standard-gauge interchange wagons.

*From an address by Mr K. A. Smith, Chairman, ANR Commission, to the International Cargo Handling Co-ordination Association, in Melbourne.

It seeks to

- ★ Maximise the use of rollingstock
- ★ Forecast wagon requirements
- ★ Eliminate unnecessary haulage of empty wagons, and
- ★ Satisfy market requirements.

One important function of CENWAG is the monitoring of bogie exchange through traffic, and the diversion of traffic where bottlenecks occur.

Within days of commencing operations, the Western Australian system advised that a container ship had become disabled in the Indian Ocean and that some 350 containers destined for the eastern States would be discharged at Fremantle and railed across the continent. CENWAG ensured that the necessary rail wagons were available to handle this traffic.

For the Landbridge concept to succeed it requires close co-operation between the five separate railway systems involved. The Landbridge Committee which meets every three months provides the forum for this co-operation. Railway transit times, operational improvements, delays at bogie exchanges, the availability of railway car carrying wagons are among the many items that are discussed and resolved at a railway inter-system level through Landbridge.

* * *

A major link in the Australian Landbridge is the 1700 km Trans-Australian railway stretching across the continent from Port Pirie in South Australia to Kalgoorlie in Western Australia.

The Trans-Australian railway is operated and maintained by Australian National Railways (formerly the Commonwealth Railways), which has been making an all-out effort to win new traffic for the line with an improved piggy-back service for container loads and pantechnicons with or without prime movers. Improved scheduling and attractive freight rates have been introduced.

In mid-1974, Australian National Railways commenced a programme of relaying the entire Trans-Australian line with concrete sleepers. To date, just over 500 km have been resleepered at a rate of about 160 km a year. It is a mammoth task when you realise that 1500 concrete sleepers are used in every kilometre.

The decision to use concrete sleepers came from a desire for a "minimum maintenance" railway in

the remote area through which the line passes, as well as to upgrade the line for the increasing traffic task of the future. Concrete sleepers not only reduce the effects of the extreme climatic conditions on train operations but permit higher speeds throughout the whole year.

* * *

Undoubtedly the next major step forward for Landbridge Australia will be the completion of the 831 km Tarcoola-Alice Springs line, a new-all weather line which is due to reach Alice Springs in about 17 months time and will link Alice Springs and the Northern Territory with the Australian standard-gauge railway.

It is the longest railway construction project undertaken in Australia since the completion of the Trans-Australian railway more than sixty years ago. It is currently some twelve months ahead of the original completion date and within the \$145 million budget... no mean feat in today's climate of rapidly rising costs and industrial unrest.

The new line replaces the old Central Australia railway to Alice Springs which, as no doubt many are aware, has been plagued by flooding and washaways ever since its completion to the Alice in 1929—fifty years ago next month.

We believe the new line will revolutionise freight services to the Territory. We are proposing to offer shippers Adelaide-Alice Springs in under 48 hours compared with the present four- to five-day journey.

Because of the unreliable condition of the old Central Australia railway, we are currently investigating the possibility of running freight trains as far as Kulgera on the new Tarcoola-Alice Springs line as soon as construction passes that point. Kulgera is just over the South Australia-Northern Territory border and 270 kilometres south of Alice Springs.

Rail freight services on the North Australia railway ceased on 30 June 1976 following the closure of the iron-ore mines at Frances Creek which provided the bulk of the traffic. There are three situations, however, that could lead to the new Tarcoola-Alice Springs standard-gauge railway, due to be completed in November next year, being extended to Darwin:

(1) A Darwin population growth of sufficient size to justify a rail connection with Alice Springs; the

figure would probably need to be in excess of 100,000 which, on present projections, is unlikely to be reached before the turn of the century.

(2) The occurrence of some large-scale mining or industrial development south of Darwin which would involve the transport of large tonnages of ore or commodities at competitive freight rates for shipment or processing at or near Darwin.

(3) A Commonwealth Government decision to link Darwin with Alice Springs (or to the East Coast) as an extension of Australia's national transport infrastructure.

Even though there is no indication that the necessary funds would be made available in the short term, early identification of a standard-gauge route and its acquisition or reservation is necessary to ensure that planning by Northern Territory authorities in respect of roads and towns south of Darwin can progress in the full knowledge of what is ultimately intended by ANR.

The Commission believes that a reconnaissance, and any additional aerial photography necessary to supplement existing mapping, should be commenced as soon as possible. Identification of an alternative route between Darwin and Katherine is particularly desirable as the existing route is entirely unsuited to standard-gauge operations.

* * *

As the world energy situation worsens the potential for inter-system main-line freight in Australia is almost unlimited and it is in the transport task that railways do best.

A major report recently prepared by economic and planning consultants, Nicholas Clark and Associates, for the Queensland Railways has predicted a progressive shift of rail freight from road to rail as the price of fuel steadily increases.

Rail uses less than half as much energy as road to carry twice as much freight, the report states. At a time when fuel costs are escalating and petroleum resources are limited, we believe railways have a competitive edge which will win back much of the transport task presently undertaken by road.

Railways are now concentrating their efforts on bulk traffics, inter-capital freight, and freight between

(continued on p. 31)

Queensland Railways is planning to spend more than \$13 million to upgrade the living conditions of some 2,500 men engaged in railway maintenance in remote areas of the State.

The camps which accommodate the migratory gangs contain ablution blocks, kitchen-diner units and bunk houses, and have been designed for transportation on rail wagons and road trailers especially manufactured for the purpose.

Electrical power is reticulated throughout each camp for lighting, refrigeration, cooking, hot water, water-pressure pumps and general purpose use; and a contract worth \$290,000 for forty transportable Onan diesel generating sets has been awarded to the Australian distributors, Distragen Pty Ltd.

The generating sets are being modified by Distragen to the specification of the Queensland Railways. Additional features include skid bases, canopies, and large-capacity fuel tanks. The units will operate 24 hours per day continuously and run several days before re-fuelling is necessary.

Designed as self contained power-units, they can be transported quickly and easily when camp re-location is necessary.

The units chosen by the Queensland Railways are of 4.5 kw and 9.0 kw capacity; and the recent contract for forty units brings the number now in service with the Queensland Railways to 89.

The first seven units in the field clocked between nine and twelve thousand hours each before undergoing a major overhaul. They were operated under extreme conditions of temperature and environment, and certainly confirmed their reputation for the tight tolerances held over voltage and frequency, and for quieter and cleaner operation.

Diesel Power Generation for QR's Migratory Gang Camps



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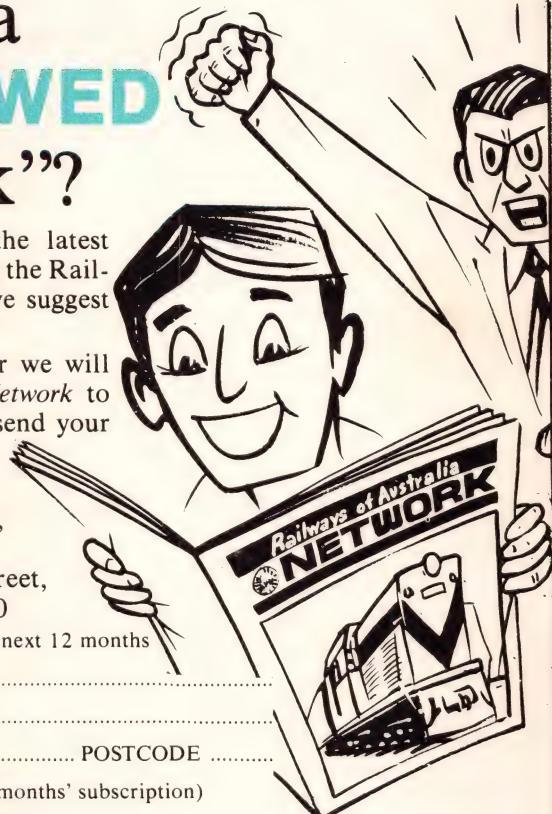
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Recent Contracts

Recent Contracts include:

QR — Installation of power signalling, Callemondah Yard — Gregory Project: GEC Australia Ltd (\$2,040,856).

QR — Supply and delivery of 1350 solid steel wheels: Bradford Kendall Foundries Pty Ltd (\$423,570).

QR — Supply and delivery of wet process porcelain insulators: Doulton Insulators Australia Pty Ltd (\$353,677), Dulmison Australia Pty Ltd (\$16,731).

QR — Making of uniform garments, 1 July 1979 to 30 September 1980: Freedman & Co. Pty Ltd (\$250,416).

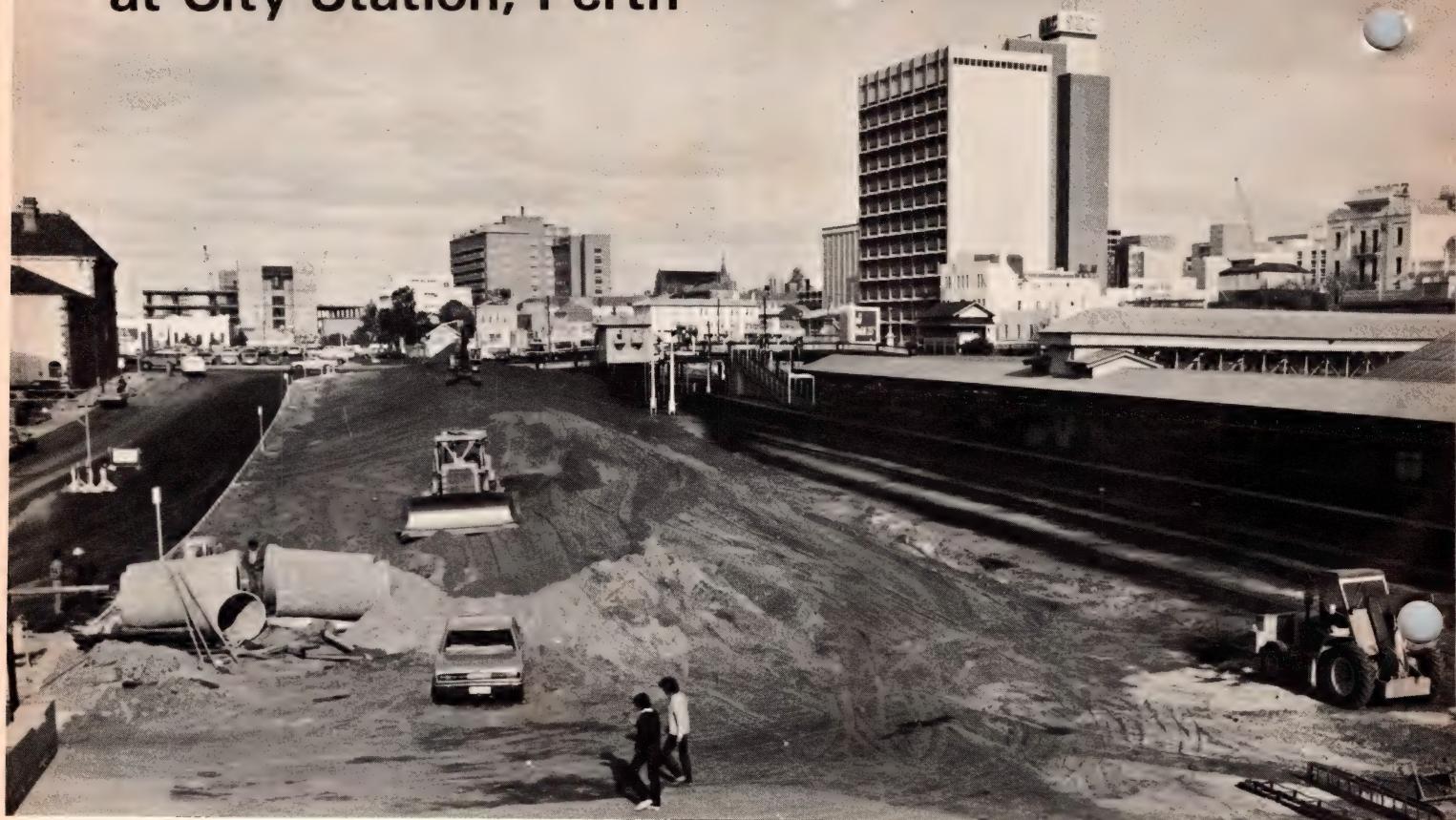
QR — Manufacture, supply and delivery of 221 sets of points and crossings: Mackay Foundry Pty Ltd (\$282,086), Westinghouse Brake & Signal Co. (Aust.) Pty Ltd (\$143,116).

QR — Earthworks for passing loop extensions at Mt Larcom, Aldoga and Raglan — Gregory Project: Cyril Golding Earthmoving Pty Ltd (\$160,205).

QR — Supply of 17,400 cu. metres of prepared stone railway ballast at Charters Towers: Gromac Pty Ltd (\$113,100).

WAGR — Three years requirements in distillate fuel, from August 1979: BP Australia Ltd (\$23,317,055).

Landscaping and Upgrading at City Station, Perth



City Station, Perth, and the adjacent area, is being upgraded as part of a planned urban-renewal programme. Last year old railway buildings facing Roe Street were demolished and the land made available for garden landscaping to improve the outlook from both the new Art Gallery and City Station.

The forecourt of City Station, fronting Wellington Street, is also being landscaped to include public seating, re-designed lighting and the Chamber of Mines fountain, a 150th anniversary gift to the people of WA from the mining community.

It is hoped that original bridge lighting can be restored, and old cast-iron bollards and chains are to

be returned after restoration to protect pedestrian areas.

The eastern end of the forecourt includes a short-term (pick-up/set-down passenger) parking area and a taxi rank. The western end, in front of the Horseshoe Bridge, will be established as an external exhibition area by West Trade. This organisation is also converting the undercroft of the bridge for a local products and industry exhibition which is expected to be open to the public early in 1980.

The upper floor of the station building and the western end of the ground floor is being leased to West Trade for offices, a private members club, computer data bank and seminar facilities.

Inside City Station, the bookstall and refreshment kiosk is to be renovated and with structural alterations near the left side of the station entrance, internal accommodation will be provided for private stall-holders, which are at present located on the outside of the building.

The ticket office is to be relocated at the opposite side of the station entrance and barriers are to be improved to speed passenger flow. It is also planned to upgrade train-departure information boards.

The numerous advertising hoardings in the station area are to be removed and future advertising to a high standard will be concentrated in two special structures — one at the Bridge/Beaufort Street intersection and the other on the site of the existing water tower adjacent to William Street bridge.

The station platforms are to be re-surfaced and equipped with new furniture, and the illumination improved.

The northern undercroft of the bridge is also to be restored and the pavement re-aligned to form an arcade. It is hoped to make this area available for development in 1980.

Clearing the undercroft.

The Window Seat



Mr N. L. (Neville) Ward has been appointed District Traffic Superintendent at Geraldton. He started his career with Western Australian Government Railways in 1951 at Merredin and served as Station Officer at various country centres

and in the Chief Traffic Manager's office, Perth.

He was appointed Assistant Secretary of the Railways Institute, a position he held for 2½ years, before returning to the country as Assistant District Traffic Superintendent, Merredin, and four years later to a similar position in Bunbury. In both centres, Mr Ward was involved in the movement of bulk traffics and closely associated with new construction and maintenance projects.

As District Traffic Superintendent, Geraldton, Mr Ward's region extends east to Mullewa and south to Gillingarra and Ballidu. He is a member of the Chartered Institute of Transport and recently completed a residential senior management course at Mandurah conducted by the Australian Institute of Management.

Mr Euan McQueen has taken up, from 1 October, his appointment as New Zealand Railways Assistant General Manager (Finance and Administration). Previously Chief Administration Officer (see *Network*, October 1978), Mr McQueen, MA, FCIT, succeeds Mr F. D. Daly who retired last week after forty years service.

* * * * *

New Zealand Railways operating deficit for 1978-9 was \$47.3m compared with \$37.8m the previous year, according to the annual report recently tabled in Parliament. Revenue was \$299.5m (up 12.4%) and expenditure totalled \$346.8m (up 14%).

The rate of decrease in the volume of traffic had fallen, and there are now signs that the level of traffic may be tending to lift.

While acknowledging that the extent of the operating deficit was disappointing, the Minister of Railways pointed out that almost half of it was accounted for by interest charges on loans from the International Bank for Reconstruction and Development, on overseas credits for capital equipment, and on National Development Loans.

* * * * *

Export containers moved by NZR to cellular ships increased by more than a third, to 86,666, in 1978-9. This compares with 63,298 in 1977-8, and 38,315 in 1976-7.

In addition, more than 23,000

twenty-ft container equivalents of export cargo were hauled by rail to roll-on roll-off or conventional ships.

* * * * *

Capital investment in US railroads in 1979 is now estimated at \$5100 million, an increase of 25% over actual spending in 1978. *Railway Age* forecasts that 80,000 new freight wagons and 1200 new and 300 rebuilt diesel locomotives, worth more than \$4000 million, will be delivered this year.

Between \$800 and \$900 million will be invested in capital improvements to track and other fixed facilities.

In addition to these capital expenditures, US railroads will spend another \$5000 million on materials and supplies charged to operating expenses.

The capital explosion is being fuelled by large-scale investment in freight wagons by private investors. About half of the wagons in the present order backlog are being financed by non-railroad owners.

Tonne-km are expected to rise at a much higher rate than wagon-loadings because the greatest traffic strength will be in heavy long-haul commodities such as coal, grain and chemicals.

The rate of return on net investment could rise to 3% for the first time in five years.

— *International Railway Journal*.



Mr Graham Cook has taken up his position as New Zealand Railways' Chief Administration Officer. Educated at Hamilton Boys High School, Mr Cook joined Railways Road Services in his home city in 1960 and served in Kaitaia and Rotorua before joining the Road Services Director's office in Wellington in 1967.

He was appointed to the General Manager's Administration Division in 1968, and Personnel Assistant in the Staff Division in 1972, returned to the Administration Division in 1974, and was promoted to Administration Officer (Special Duties) in 1975. He is a member of the Chartered Institute of Transport.

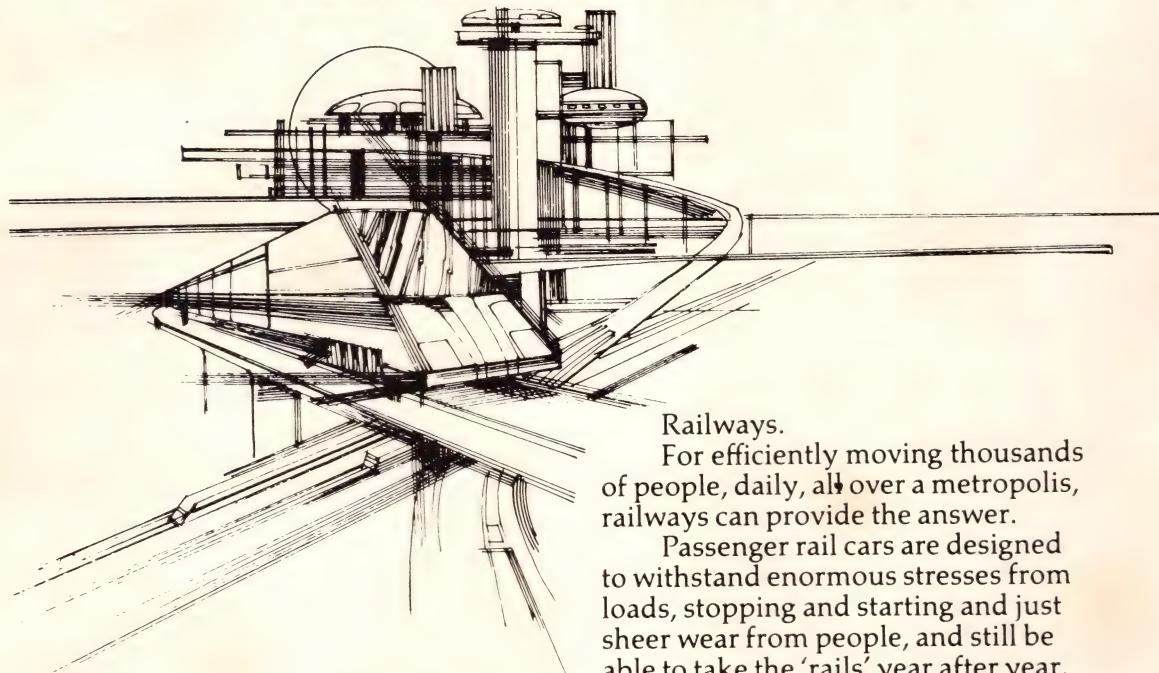
* * * * *

New Zealand Railways have ordered new rolling stock worth almost \$15 million. The acting Minister of Railways, the Hon. T. F. Gill, announced approval of a tender for fifty new modular guards vans, which will be manufactured by Daewoo Limited of Korea.

The vans, with spares including new bogies, will cost just over \$6 million. They will be similar in design to the 73 Fm vans which came into service in 1977.

Approval has also been given for the purchase of ten more Df class main-line diesel locomotives from General Motors of Canada at a cost of more than \$8 million. The twenty Df's which arrived in New Zealand in June of this year had proved to be both versatile and fuel-efficient. The ten which have now been ordered are intended for use in the Christchurch-Dunedin-Invercargill area.

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Douglas (004) 24 4844

Cooee (002) 31 2344

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Hobart (002) 34 2244

CSS/38/7709

ROA's passenger commercial has been highly commended in the 1979 awards recently announced by the Federation of Commercial Television Stations. The 60-second commercial was entered by Thomson, White and Partners, advertising agents for Railways of Australia, and competed with more than seven hundred other entries. It contrasts the trauma of interstate travel by road with the relaxation and comfort of rail, and has been telecast throughout Australia.

* * *

Rhodesia Railways rehabilitating steam. A policy decision made some eight years ago to phase out steam locomotives from Rhodesia Railways by July 1980 had to be urgently reviewed in the light of recent fuel crises. It has been decided that steam power will have to be retained for a further 10 to 15 years, and steam locomotives are now being completely overhauled.

Contractors undertake the complete stripping, fitting work and reassembly, and also manufacture the complete new inner fireboxes. Others fit the new fireboxes, completely overhaul the boilers, manufacture new axle-boxes, and supply axles and roller-bearings. Rhodesia Railways do the re-tyring and profile turning of the wheels, recondition all valve motion components, and supervise the whole procedure.

The first locomotive steamed out on 1 June, and two more of the same 16A Class were released by the end of the month. Two to three units are being completed every month. (*Rhodesian Railways Magazine*, Aug. 1979).

* * *

Big increases in rail passenger bookings, following restricted petrol supplies in May and early June, are reported in *Nuacht*, Eire's transport journal. Passenger numbers rose by 27 per cent compared with 1978. June holiday week-end bookings at Dublin's Heuston Station were an all time record.

(continued from p. 26)

major cities. Regional freight centres are being established so that the railways can haul goods to and from these centres, leaving regional distribution and collection to road operators. Here, rail and road are complementary, and each performs the role for which it is best suited. ■

CHAMPAGNE at a Table Wine PRICE!



MC902



A Westrail iron-ore train leaves the mine site bound for Kwinana. A basic service of eight trains weekly operates the return service to Koolyanobbing.

Iron-ore haulage. Dampier Mining Co., Koolyanobbing, loaded the 20 millionth tonne of Dowd's Hill iron ore into a Westrail train recently for haulage to Australian

Iron & Steel Pty Ltd's blast furnace at Kwinana.

Since the first iron-ore train left Koolyanobbing in April 1967, Dowd's Hill has been reduced in

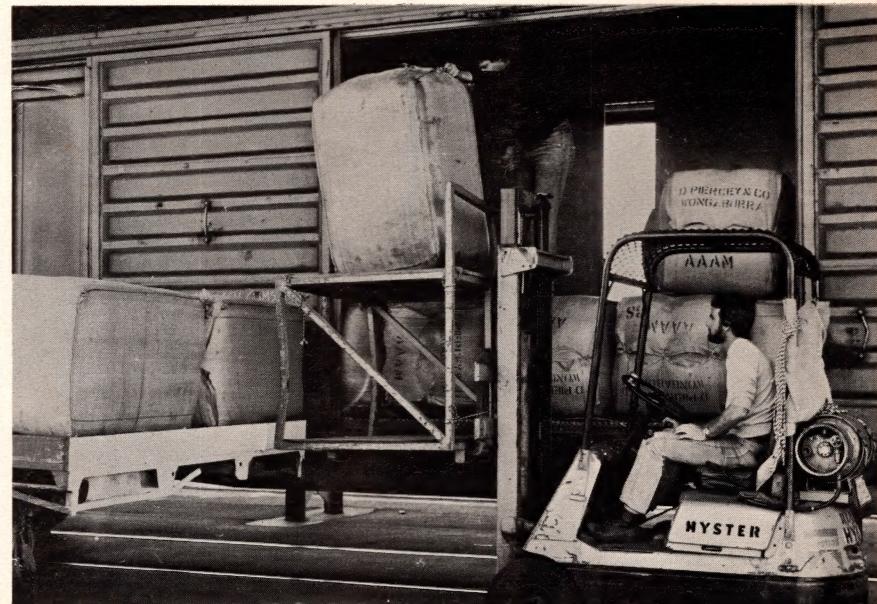
height by 88 metres, with new bench levels now being developed at a lower level than the surrounding plain. In addition to the iron ore, about 14 million tonnes of waste rock has been moved.

Wool haulage from the State's major sheep-rearing districts centres mainly on the Robb Jetty and North Fremantle Westrail terminals as ports for export.

Carriage of wool over the entire Westrail network reached a peak in 1976 with 147,602 tonnes. The following year 144,935 tonnes were railed, and in 1978 the figure slipped to 116,124 tonnes. During the 1979 financial year the total rose to 127,668 tonnes.

During the period 1976/79, a total of 187,129 tonnes was received at Robb Jetty, closely followed by North Fremantle with 155,777 tonnes over the same period. Fremantle Goods handled 81,660 tonnes and Spearwood 52,516 tonnes.

Albany is the State's other major railhead for the wool industry; regular sales were held there for the



Unloading wool bales at Robb Jetty.

period under review — 1976/79. In this period 50,144 tonnes were railed from surrounding country areas.



Forrestfield hump record. Westrail has marshalled its three millionth freight wagon over the automatic hump at Forrestfield.

This is the total number of wagons marshalled for destinations on narrow-gauge routes on the rail network, ranging from Geraldton in

The three-millionth wagon is "humped" at Forrestfield Marshalling Yard.

the north to Albany in the south, since inauguration of the automatic hump control in March 1973.

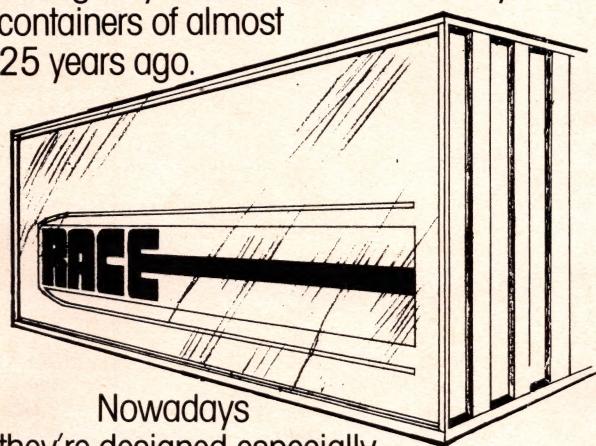
The average number of wagons humped each week at Forrestfield totals 10,000 over 16 eight-hour shifts.

The largest number of narrow-gauge wagons marshalled during one shift was attained on 6 December 1974, when 1098 wagons were moved over the hump with one locomotive. Average wagon movement for an eight-hour shift is 650.

The monthly record was achieved in August 1976 when a total of 47,569 wagons were humped.

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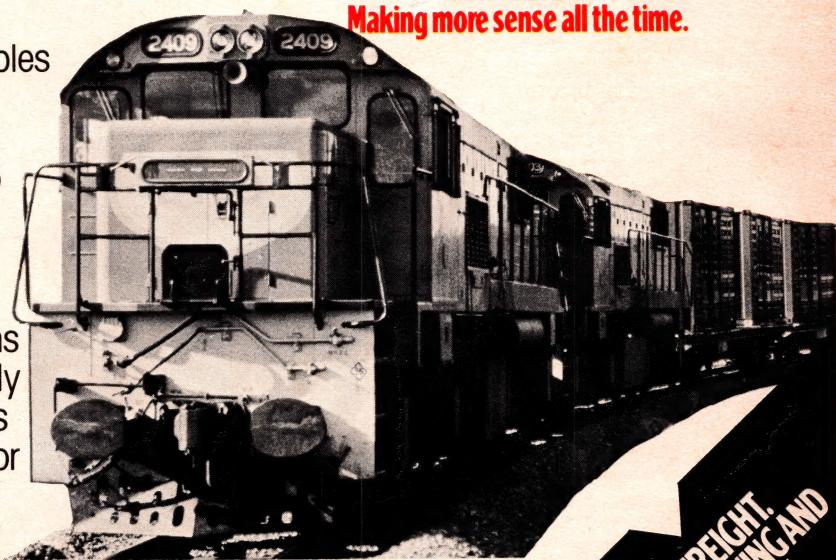
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